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The recent emergence of "cyber warfare" in the contemporary strategic environment poses numerous conundrums, not the least of which is the basic meaning of this term. Is it a metaphor or a literal part of warfare writ large? A closely related issue is how cyber warfare relates to the law of armed conflict. In our lead article "The Law of Cyber Targeting," Michael N. Schmitt tackles this question. While developing cyber technologies and techniques have for some time been outrunning accepted international legal frameworks and assumptions, this situation is beginning to change.

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NAVAL WAR COLLEGE REVIEW

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CONTENTS

FROM THE EDITORS

The recent emergence of "cyber warfare" in the contemporary strategic environment poses numerous conundrums, not the least of which is the basic meaning of this term. Is it a metaphor or a literal part of warfare writ large? A closely related issue is how cyber warfare relates to the law of armed conflict. In our lead article, "The Law of Cyber Targeting," Michael N. Schmitt tackles this question. While developing cyber technologies and techniques have for some time been outrunning accepted international legal frameworks and assumptions, this situation is beginning to change. The publication in 2013 of the *Tallinn Manual on the International Law Applicable to Cyber Warfare*—of which Schmitt served as general editor—has gone a considerable way toward cementing a consensus among leading experts in the law of war on this subject. Here, Professor Schmitt systematically reviews the findings of that study, with particular emphasis on issues that remain controversial or contested. The central takeaway from his presentation is that in spite of the peculiar characteristics of cyber warfare and our so-far limited experience of it, existing international law in fact provides a workable if not completely satisfactory framework within which to place it. Michael N. Schmitt, a former U.S. Air Force officer, is the Charles H. Stockton Professor of International Law and director of the Stockton Center for the Study of International Law at the Naval War College.

In the post–Cold War era, as Milan Vego points out, the term "the littorals" has gained currency in naval circles in this country and elsewhere, yet the specific character of war of naval war in proximity to land is seldom carefully explored. In "On Littoral Warfare," Vego argues that the differences between this form of warfare and "blue water" naval warfare are substantial and that they need to be understood properly if navies are to fight effectively in this medium in the future. What he offers is a "theory" of littoral warfare that can serve as a foundation for appropriate joint doctrine and operations, something that is very much lacking today. Ranging widely over historical examples from many parts of the world and several centuries, Vego shows that littoral warfare has actually been more the rule than the exception in recent times—a fact that has been obscured by the dominance in classical naval strategic thinking of strongly "blue water"–oriented theorists, such as Alfred Thayer Mahan. Milan Vego is professor of joint military operations at the Naval War College.

For many smaller navies today, the littoral environment discussed by Vego is in fact the virtually exclusive focus. Deborah Sanders offers a case study of one such navy. In "The Bulgarian Navy after the Cold War," she reviews the history of Bulgaria's efforts to rebuild its nation and armed forces following the dissolution of the Warsaw Pact and the demise of communist rule in Eastern Europe. Not surprisingly, the Bulgarian navy fell on hard times given economic troubles during this period, in particular the end of Soviet military assistance, and severe political instability at home. With Bulgaria's eventual turn to NATO and the European Union and improvement in its economic situation, a modest program of modernization and professionalization of its navy could finally be undertaken. It remains unclear in what ways deteriorating relations between Russia and the West over Ukraine will affect NATO's maritime frontier on the Black Sea for the future. Deborah Sanders is a senior lecturer in the Defence Studies Program of King's College London.

The battle of Midway (4–5 June 1942) seems to be a gift to historians that never stops giving. In "A Question of Estimates: How Faulty Scouting Drove Estimates at the Battle of Midway," Jonathan Tully and Yu Lu revisit the issue of the culpability of Admiral Nagumo Chuichi and his 1st Air Fleet staff in the Japanese defeat. They argue that the evidence now suggests that Nagumo's failure to detect the American carriers on the morning of 4 June was not an idiosyncratic error but rather reflected standard Japanese scouting practice both then and later when intelligence otherwise had provided no indicators of the presence of possible enemy carriers. In fact, there is evidence that officers of the 1st Air Fleet staff later tampered with reports of the battle to obscure the fact that they were operating under an assumption that contact with the American carriers that day was unlikely. Indicators to the contrary were actually picked up by the Japanese but not disseminated to Nagumo, for reasons not altogether clear. Anthony Tully is coauthor, with Jon Parshall, of *Shattered Sword: The Untold Story of the Battle of Midway* (2005).

Finally, in "Revisiting the Navy's Moral Compass: Has Commanding Officer Conduct Improved?," Captain Jason Vogt, USN, carries on a conversation that was initiated in these pages by Captain Mark Light, USN, in his "Navy's Moral Compass: Commanding Officers and Personal Misconduct" (Summer 2012). Vogt concludes that while the Navy seems to be making some progress in this area, there is more that could be done to improve the situation.

The editors would like to recognize the contributions to the *Naval War College Review* of its longtime book-review editor, Phyllis Winkler, who retired in January 2015. We wish her fair winds and following seas. For the future, Phyllis's duties will be shared between our administrative assistant, Lori Almeida, and two

Naval War College faculty members, Timothy J. Demy and Brad Carter. To them: Welcome aboard!

WILLIAM C. MARTEL (1955–2015)

It is with sadness that we note the passing of William Martel, a member of our Editorial Board for many years. Before moving on to the Fletcher School of Law and Diplomacy, Bill was a popular teacher on the faculty of the Naval War College and a good friend. He will be missed by all who knew him.

MAJOR FLEET-VERSUS-FLEET OPERATIONS IN THE PACIFIC WAR, 1941–1945

The newest, twenty-second title in our Historical Monograph book series is now available: *Major Fleet-versus-Fleet Operations in the Pacific War, 1941–1945,* by Milan Vego. It studies three major naval operations of World War II and the battles of the Coral Sea, Midway/Aleutians, and the Philippine Sea, which resulted from them. Along with ample background on geographic and strategic context, Dr. Vego gives detailed accounts of the unfolding actions, utilizing much primary-source material from American and Japanese archives. *Major Fleet-versus-Fleet Operations in the Pacific War, 1941–1945* is available for sale at the U.S. Government Publishing Office online bookstore, at http://bookstore.gpo .gov.

IF YOU VISIT US

Our editorial offices are now located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W334, 335, 309). For building-security reasons, it would be necessary to meet you at the main entrance and escort you to our suite—give us a call ahead of time (401-841-2236).

Rear Admiral Howe became the fifty-fifth President of the U.S. Naval War College on 8 July 2014. He is a native of Jacksonville, Florida and was commissioned in 1984 following his graduation from the U.S. Naval Academy.

Howe's operational assignments have included a full range of duties in the Naval Special Warfare and joint Special Operations communities. He commanded Naval Special Warfare Unit 3 in Bahrain, Naval Special Warfare Group 3 in San Diego, and Special Operations Command, Pacific in Hawaii. His service overseas includes multiple deployments to the western Pacific and Southwest Asia and participation in Operations EARNEST WILL, PROVIDE PROMISE, ENDURING FREEDOM, and IRAQI FREEDOM.

His key joint and staff assignments include current operations officer at Special Operations Command, Pacific; Chief Staff Officer, Naval Special Warfare Development Group; Assistant Chief of Staff for Operations, Plans and Policy at Naval Special Warfare Command; Director of Legislative Affairs for U.S. Special Operations Command; and Assistant Commanding Officer, Joint Special Operations Command.

Howe graduated from the Naval Postgraduate School in 1995 with a master of arts in national security affairs (special operations / low-intensity conflict), and from the National War College in 2002 with a master of arts in national security.

PRESENTER'S FORUM

Keeping Sights on Targets

SHOOTING IS A core SEAL skill. Looking back at my early years, I remember spending a lot of time—at a lot of ranges—to build the ability to shoot quickly and accurately. And from the very beginning, I remember the emphasis our training cadre put on the *importance of feedback* to improve shooting skills, whether through the careful analysis of the shot groups on the target at a flat range to improve sight alignment and sight picture or through the employment of steel targets for immediate auditory and visual cues during reactive shooting drills.

Later in my career, as focus shifted from the tactical to the operational level of war, the importance of feedback remained constant. During these years, I gained a great appreciation for the importance of assessments as a form of operational feedback in the Plan-Direct-Monitor-Assess cycle. Absolutely critical to effective military operations in a complex, dynamic operational environment, the assessment effort is key to understanding not only if you're "hitting what you're shooting at" but more importantly, if you're "shooting at the right targets."

Today, as my focus has shifted again, this time from the operational world to the Naval War College, it's fascinating to see the continued criticality of feedback in our efforts. We are a multifaceted graduate institution chartered to provide professional military education to our talented and committed students; the desired outcome of our efforts is the creation of a cadre of well-informed critical thinkers who are prepared to address creatively the challenges they will face as military leaders in the decades that follow their graduation. In this Forum, I'd like to reflect on how the Naval War College employs its extensive program of internal and external assessment to ensure we are "on target" with our educational efforts (we'll look at our research, gaming, and analysis efforts in a future Forum).

Internal Assessments. Our faculty continually revises and updates our academic programs, developing new case studies as needed to maintain focus on current issues and to incorporate findings from emerging scholarly research. Many of our faculty members are actively engaged with leaders and operators from across the Department of Defense, and our subject-matter experts travel widely around the globe to maintain situational awareness over the full national-security spectrum. Since we value the opinion of our very professional student body, we gather feedback from our students as they arrive, as the classes progress, at the end of each term, and through alumni surveys. We also receive direction from the Navy Staff through the Advanced Education Review Board process, as well as recommendations on process improvement from our Board of Advisors. On a continuing basis, our Office of Institutional Effectiveness measures the progress being made toward the goals established in our Strategic Plan. Assessment and introspection are woven into the fabric of the College's existence.

Joint Accreditation. At its core, the Naval War College is a Professional Military Education (PME) institution that, as a part of a Department of Defense–wide network of institutions, seeks to produce:

- Strategically minded officers educated in the profession of arms who possess an intuitive approach to joint war fighting built on individual service competencies.

- Critical thinkers who view military affairs in the broadest context and are capable of identifying and evaluating likely changes and associated responses affecting the employment of U.S. military forces.

- Senior officers who, as skilled joint war fighters, can develop and execute national military strategies that effectively employ the armed forces in concert with other instruments of national power to achieve the goals of national-security strategy and policy in the air, land, maritime, and space physical domains and the information environment (which includes cyberspace).

The Chairman of the Joint Chiefs of Staff has provided guidance on how each military service should execute its joint education mission. The Officer Professional Military Education Policy (OPMEP) instruction delineates the specific subject matter and skills that must be included in each PME educational program, and it establishes the Process for Accreditation of Joint Education (PAJE), which is a peer-review process that periodically (every six years) assesses the school's and college's educational programs to ensure that they are meeting all policy objectives. The Naval War College is currently conducting the final phases of its comprehensive self-study in preparation for two formal PAJE reviews that will take place during the 2015 calendar year. In May 2015, a PAJE team composed of educators and administrators from sister institutions and headquarters

staffs will review the Senior-Level College programs of our College of Naval Warfare. Another group will visit in November 2015 to evaluate the College of Naval Command and Staff and the College of Distance Education's Intermediate-Level College programs. Successful completion of these reviews will result in the reaffirmation of our status as an approved PME provider.

Regional Accreditation. In addition to the assistance and oversight provided by the Joint Staff, we also voluntarily seek feedback from the professional organization that monitors the performance of institutions of higher education in our geographical region. The Commission on Institutions of Higher Education (CIHE) of the New England Association of Schools and Colleges is one of seven accrediting commissions in the United States that provide institutional accreditation on a regional basis. In the most basic terms, accreditation is an expression of confidence in the institution's purposes, performances, and human and financial resources. The CIHE, which is recognized by the U.S. Department of Education, accredits approximately 240 institutions in the six-state New England region and overseas. These institutions achieve accreditation by demonstrating they meet the commission's eleven Standards for Accreditation, each of which articulates a dimension of institutional quality. The Naval War College has been accredited by the commission since 1989, when it became the first PME institution to be regionally accredited. For the past eighteen months we have been engaged in an intense and faculty-led process of self-study, addressing the CIHE standards. We completed a comprehensive evaluation visit in November 2014 by a team representing the commission, and in March 2015 the provost and I will appear before the commission to answer additional questions about our remarkable institution. We are confident that we will be recognized by our academic peers for the excellent work being done by our dedicated faculty and staff.

As you can imagine, we gather a lot of data from these detailed internal and external assessments. The key to future success is to capitalize on what we learn by having an open perspective and a willingness to make changes when and where necessary. We must preserve our impressive legacy but not be bound by it. We must be flexible and adaptable to accommodate ever-changing circumstances but not generate "churn" in our academic programs. We will continue to exercise rigor in our feedback and assessment efforts to ensure not only that we're "hitting what we're shooting at" but also that "we're shooting at the right targets" in all our educational efforts.

P. GARDNER HOWE III
Rear Admiral, U.S. Navy
President, Naval War College

Michael N. Schmitt is the Charles H. Stockton Professor of International Law and the director of the Stockton Center for the Study of International Law at the Naval War College, Newport, R.I. He is also Senior Fellow, NATO Cooperative Cyber Defence Centre of Excellence, in Tallinn, Estonia; Professor of Public International Law at Exeter University, in the United Kingdom; and a Fellow in the Harvard Law School Program on International Law and Armed Conflict.

THE LAW OF CYBER TARGETING

Michael N. Schmitt

T he 2008 war between Georgia and Russia was predictably short, as Russian military might quickly trumped Georgian nationalist enthusiasm. Beyond its momentous geopolitical implications, it was the first war in which cyber activities loomed large; the conflict marked the public birth of "cyber war," or at least cyber *in* war.[1]

Cyber operations were not a completely new phenomenon. Most notably, they had played a significant geopolitical role in the previous year, when "hacktivists" around the world directed malicious cyber operations at NATO member Estonia following its transfer of a Soviet-era statue commemorating the Great Patriotic War from central Tallinn to the outskirts of the capital.[2] But this was not "war" in the traditional sense of two or more states engaged in armed hostilities against each other. In the Georgian case, by contrast, the cyber activities took place on belligerent territory during an armed conflict that involved classic kinetic military operations. Although civilians launched most of the attacks, and while they caused no physical damage or injury, there is no question that, unlike the events in Estonia, international humanitarian law (IHL, also known as the law of war, law of armed conflict, and *jus in bello*) applied.

Cyber activities have become an indelible facet of contemporary warfare, not just for cyber-empowered militaries such as that of the United States, but also for low-tech forces. Terrorist and insurgent groups benefit from the use of the Internet to recruit fighters and to finance operations. Social media are exploited for purposes that range from passing targeting information to directing the deployment of forces (the insurgent "flash mob"). Mobile phones are as much part of the twenty-first-century kit bag as weapons, and e-mail and texting have become

pervasive means of military communication. The Arab Spring was a watershed in this regard, and cyber operations are ongoing in the conflicts in Ukraine and Syria. It is quite simply unimaginable that a contemporary conflict would not involve some manner of cyber operations, whether as simple as passing intelligence information using smartphones or as complicated as bringing down the enemy's integrated air-defense system.

In light of the role that cyber operations are playing in contemporary conflicts, attention must be paid to the law that governs these activities—to borrow a sports analogy, a team that takes the field without knowing the rules is usually going to lose, even if it is the better team. International law, and particularly IHL, exerts a powerful influence on tactics, operational planning, and strategic decision making in modern warfare. The fight can be won on the battlefield but lost in the court of public and international opinion when one side appears to have acted outside the law. Given the novelty of cyber operations as a method of warfare during an armed conflict, any alleged misuse, even at the tactical level, has the potential for strategic consequences.

The NATO Cooperative Cyber Defence Centre of Excellence, based in Tallinn, Estonia, has taken the global lead in addressing this issue. In 2009 it launched a three-year project to examine the application of international law, especially that governing the use of force, to cyber operations. Over twenty distinguished legal scholars and government legal advisers came together to produce the *Tallinn Manual on the International Law Applicable to Cyber Warfare,* a resource currently being expanded in the Centre's "Tallinn 2.0" project.[3]

Informed by the *Tallinn Manual* process, in which the author served as director, this article examines IHL's core norms—those governing targeting—as applied to cyber operations. It does so by following the legal logic applicable to virtually every targeting operation, from naval gunfire and air attack to special-forces operations and space attacks.[4] In each such case, those who plan, approve, and execute targeting missions have to ask the following questions:

- What law applies to my operation?

- May I engage the intended target?

- Is the weapon I want to use legal?

- What precautions must I take to avoid collateral damage?

- Do the scope and degree of likely collateral damage prohibit me from engaging the target?

There is now widespread agreement that international humanitarian law applies in its entirety to cyber operations conducted during an armed conflict.[5] Thus, the questions set out above apply fully to targeting in the cyber context,

albeit with a degree of interpretive creativity at times. This article will explain how each is resolved with respect to cyber operations. The explanation is designed for policy makers and operators who conduct, rely on, approve, or are targeted by cyber operations. In the contemporary strategic environment, knowledge of the law applicable to cyber warfare is quite simply indispensable.

THE APPLICABLE LAW (PART I)

The threshold question in every targeting operation is whether the international humanitarian law rules even apply. IHL comes into play only when there is a war—an "armed conflict," in technical legal parlance. There are two forms of armed conflict, international and noninternational.[6] The former exists when hostilities break out between two or more countries, whereas the latter involves hostilities at a fairly high level between an organized armed group and a state or between two or more organized armed groups. For example, the use of force against Ukraine by Russia clearly created an international armed conflict, where-as the hostilities between Bashar al-Assad's forces and those opposing his regime in Syria are noninternational in character. Unless one of these two forms of armed conflict exists, IHL is inapplicable, in which case human rights norms and domestic law serve as the core constraints on the targeting operation in question.

Whenever there is an armed conflict of either sort, IHL governs those cyber operations having a nexus with the conflict.[7] To take a simple example, it is no less a violation of IHL, and no less a war crime, to conduct cyber operations intended to kill members of the civilian population than it is to bomb or shell them; the same law prohibiting direct attacks on civilians is breached.[8] How that IHL rule applies is discussed below, but it is incontestable that it applies in its entirety to conflict-related cyber operations.

The somewhat more challenging legal question is whether cyber operations alone may qualify as armed conflicts to which IHL applies. In other words, if there is no armed conflict in the first place, can one begin as a result of cyber operations? The question is essential, because once an armed conflict breaks out, it becomes lawful to direct cyber and kinetic strikes against the armed forces and military objectives. This is so irrespective of blame for starting the conflict. To address this issue, it is necessary to distinguish between international and non-international armed conflict.

If there are two or more states involved, the first criterion for an international armed conflict is met. The second, that "hostilities" have taken place, is somewhat ambiguous.[9] Two questions present themselves in this regard—one qualitative, the other quantitative. First, can cyber exchanges qualify as hostilities, or are they of such a unique nature that it is inappropriate to deem them such? It would seem logical that cyber operations that are qualitatively "attacks," as the term is used in

IHL, qualify as hostilities in the same way as kinetic attacks. Attacks, as explained further below, are operations causing damage or injury. There is no normative or practical logic for distinguishing between a cyber operation that damages objects or injures people and a kinetic operation with precisely the same effects.

However, whether cyber operations not qualifying as attacks under IHL may initiate an armed conflict remains unsettled. For instance, would cyber operations that result in a major loss of confidence in the stock market—a consequence far more serious than minor property damage or injury—qualify? As noted by

> *The harsh reality of . . . military cyber activity is that the heavy reliance on civilian products and infrastructure dramatically expands the universe of targetable objects.*

the International Committee of the Red Cross (ICRC), "it would appear that the answer to these questions will probably be determined in a definite manner only through future State practice."[10]

Second, is there any minimum severity below which an attack, whether kinetic or cyber, cannot be considered as having started an international armed conflict? The quantitative threshold is unclear in law. It is sometimes argued that, for instance, minor exchanges of fire between the forces of two states do not rise to the level of armed conflict. However, a better view is that which has been asserted by the ICRC for many years: "It makes no difference how long the conflict lasts, how much slaughter takes place, or how numerous are the participating forces."[11] This approach is, as lawyers say, more consistent with the "object and purpose" of IHL, since a state will want its civilians and civilian objects protected, and at the same time it will wish to be able to use lethal or destructive force against the other side if hostilities break out.

Accordingly, an international armed conflict could begin solely on the basis of cyber exchanges if two or more states were involved and the nature of the operations qualified them as attacks. To cite a well-known example, consider the 2010 Stuxnet operation against Iran. Assuming, solely for the sake of illustration, that it was states that conducted the operation, the damage arguably meant that the states involved were in an international armed conflict, at least for the period during which the damaging acts were under way.[12]

Cyber exchanges alone are far less likely to meet the two criteria for noninternational armed conflict.[13] First, the state must be facing an "organized armed group." Although the legal preconditions for qualification as such are rather complicated, in the cyber context the pressing question is whether they are met by a group organized entirely online. Organized armed groups have to be in some way "commanded," and some degree of structure must exist that allows their members to operate as a unit.[14] It is also often suggested that "organization" requires a

means to enforce IHL within the group.[15] It is difficult to see how a virtual group whose members may not even know each other's names or physical locations could meet this condition.

Additionally, the group in question must be armed. The logic underlying the discussion of international *armed* conflict would appear useful by analogy. "Armed" can be interpreted as a requirement for "hostilities," which are acts that qualify as "attacks." In this context, therefore, an organized armed group is one that conducts kinetic or cyber attacks. Thus, a group that merely conducted non-destructive denial-of-service operations, for example, would not qualify. This is one reason why the operations against Estonia did not rise to the level of a noninternational armed conflict. Those involved were acting in concert, but they were not organized into one or more particular armed groups.

Second, and unlike international armed conflict, the violence associated with a noninternational armed conflict must be protracted and must reach a high level of severity. It does not include "situations of internal disturbances and tensions, such as riots, isolated and sporadic acts of violence and other acts of a similar nature."[16] Even cyber operations causing death or destruction will sometimes not suffice. Neither would a single dramatic cyber operation, such as a cyber terrorist attack, qualify, even if causing harm far above the level just characterized, because that harm would not be protracted. In the simplest terms, the cyber conflict must start looking like a war. To turn again to the Estonian case, the hacktivist operations did not rise to this level because, despite widespread disruption of societal functions, there was no physical damage or injury.

Nonstate-actor cyber operations meeting these demanding criteria are currently unlikely. A more probable scenario is one in which cyber operations accompany kinetic ones and are governed by IHL on that basis. Therefore, when nonstate-actor cyber operations occur in isolation from kinetic attacks, they will typically be governed by the domestic law of states exercising jurisdiction over the persons and particular subject matter involved, as well as by human rights law, but not by the IHL norms described below.

THE APPLICABLE LAW (PART II)

Once it is determined that an armed conflict to which IHL applies is under way, the next step is to determine whether the law of targeting applies to the cyber operation in question.[17] Doing so is more difficult than might appear at first glance. Indeed, the *Tallinn Manual* experts struggled with the subject for three years without reaching full consensus.

Any discussion of targeting begins with the principle of "distinction," which is codified in Article 48 of the 1977 Additional Protocol I to the four 1949 Geneva Conventions: "The Parties to the conflict shall at all times distinguish between

the civilian population and combatants and between civilian objects and military objectives and accordingly direct their operations only against military objectives."[18] The United States, though not a party to that instrument, recognizes Article 48 as reflective of customary international law, which binds all states.[19] Indeed, the principle is arguably the most important in IHL, one that the International Court of Justice has labeled as one of the two "cardinal" principles of IHL.[20] In international law circles, a major debate with particular resonance in the cyber context is ongoing regarding whether the principle of distinction rules out all operations against objects and persons that do not qualify as military objectives, especially civilians and civilian objects. Textually, the article certainly appears to say as much, but such a conclusion would be both counterintuitive and ahistorical. After all, military operations, such as psychological operations, have been directed against civilian populations for centuries.

A closer look into Additional Protocol I reveals a series of prohibitions and restrictions on "attack" that operationalize the principle: *attacks* against civilians and civilian objects are prohibited, indiscriminate *attacks* are forbidden, parties to a conflict must take precautions to minimize civilian harm when planning and conducting *attacks,* a defender must take precautions to protect the civilian population against the effects of *attacks,* and so forth.[21] Helpfully, "attacks" are defined in the protocol as "acts of violence against the enemy, whether in offence or defence."[22] The characterization of an attack as a violent act is repeated throughout the treaty and in ICRC and other commentaries thereon.[23]

It would seem, however, that the protocol is inaptly worded. Violent *acts* are of less concern in IHL than are violent *consequences*. This has been obvious for decades, the paradigmatic examples being the prohibitions on chemical, biological, and radiological attacks, which are not violent in the sense of releasing kinetic force but have violent consequences, notably death. By the same logic, a cyber operation causing injury to persons or damage to objects is an attack subject to all the relevant IHL rules on attacks.[24]

But controversy surrounds the issue of whether the notion of attacks should be interpreted more broadly. A cyber operation targeting civilian cyber infrastructure ("communications, storage, and computing resources upon which information systems operate") without physical effects could be far more detrimental than one causing limited damage.[25] Consider an attack during an armed conflict on the enemy's banking, taxation, government pension, or airline reservations systems. Critics of a restrictive interpretation argue that it seems incongruent to prohibit only operations having physical effects.

Two methods have surfaced that take account of this reality without the necessity of either successfully negotiating new treaty terms (an unlikely eventuality) or interpreting the current law in a fashion that renders it unrecognizable. First,

there are those who would interpret data as an object, such that an operation that manipulated, altered, or deleted civilian data would be prohibited.[26] The conceptual problem is that the ICRC commentary to Additional Protocol I describes an object as something "tangible," and data certainly is not that.[27] Goal-oriented legal academics have proposed creative interpretation as a means of hurdling this particular obstacle but fail to offer a viable practical alternative. If data is treated as an object, any operation that manipulates civilian data would qualify as "damage" to (alteration of data) or "destruction" of (deletion of data) a "civilian object" and would thus be unlawful. As an example, deletion of a civilian's forum or blog post would be a violation of IHL, as would nondestructive psychological cyber operations directed at the civilian population. Moreover, such an interpretation would dramatically affect application of the rule of proportionality and the requirement to take precautions in attack. Both, as discussed below, extend further protection to civilian objects, the former by prohibiting attacks likely to cause "excessive" collateral damage to civilian objects, the latter by requiring an attacker to take feasible measures to limit damage to civilian objects.[28] International humanitarian law is a careful balancing of humanitarian concerns with military necessity; simply styling data as an object would throw this balance out of kilter, by barring operations that today are considered lawful in both their cyber and traditional guises.

The second approach, and the one adopted by a majority of the experts involved in the *Tallinn Manual* project, is to include "loss of functionality" in the concept of damage.[29] On this view, a cyber operation that affects the functionality of cyber infrastructure (from a laptop computer to a SCADA system*) in a manner that necessitates repair qualifies as an attack even if no physical damage results. This approach makes sense, for it is fair to describe an item as damaged when it does not work; it is broken, even though it may not be physically damaged. Among the experts taking this position during the *Tallinn Manual* project there were various shades of opinion. Some were of the view that necessity to reload an operating system satisfied the damage criterion. Others went so far as to say that cyber operations affecting data stored on the computer's drives would suffice, although this was a minority view.

The implications of the majority positions set out above are significant. Unless a cyber operation has consequences that at least affect the functionality of an object, it is not damaged in the IHL sense and the operation does not qualify as an attack. Therefore, the operation is not subject to the prohibition on conducting

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* Supervisory control and data acquisition—referring to "computer systems and instrumentation that provide for monitoring and controlling industrial, infrastructure, and facility-based processes, such as the operation of power plants, water treatment facilities, electrical distribution systems, oil and gas pipelines, airports, and factories" (*Tallinn Manual*, p. 262).

attacks against civilian objects. As a result, it is generally legal during an armed conflict to conduct cyber operations directed against civilian objects, so long as these objects are not physically damaged or do not lose functionality (or somehow result in injury to civilians). To illustrate, it would be lawful to conduct denial-of-service attacks that blocked civilian e-services such as tax collection or the payment of pension benefits but did not harm or affect the functionality of the associated cyber infrastructure, at least until the economic consequences became so severe that they began to have physical effects, such as starvation or illness. Similarly, by the majority approach it would be lawful to alter or destroy data so long as no consequences amounting to injury, physical damage, or loss of functionality are manifest; examples could include government archives, birth or citizenship records, business records, and market returns. Although such operations might raise serious moral, political, and social issues, they appear lawful today.

THE TARGET

Assuming that a cyber operation occurs during an armed conflict and qualifies as an attack, the next hurdle is determining whether the target is a lawful one. Cyber operations most frequently implicate the prohibition on attacking civilian objects. In IHL, civilian objects are defined negatively as "all objects which are not military objectives."[30] Military objectives are "objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage."[31]

The equipment and facilities of the armed forces are military objectives by nature; a command-and-control facility and cyber infrastructure developed for specific military tasks both qualify, for example, on this basis. A particular location can also be a military objective, as when cyber means are used to open a dam's gates to flood an area and deny its use to the enemy. Aside from military equipment, the most likely military objective in the cyber context is an object that qualifies by the "use" criterion—that is, one that was formerly or is still being used for civilian purposes but is now being employed, at least in part, for military ends. It should be cautioned that a rule of reason holds when applying this criterion to cyber activities. For instance, the mere fact that the military sends e-mail over the Internet does not render the entire Internet a lawful target. Finally, a civilian object can become a military objective through "purpose," which refers to the intended future use of an object. For example, if there is reliable intelligence that a civilian server farm will soon begin to store military data, the farm is a military objective that may be attacked even before data storage begins.

These definitions do not present any particular problems in the cyber setting. However, it must be acknowledged that the pervasive use of civilian cyber infrastructure for military purposes has transformed much of it into the character of valid military objectives. When an object is used for both civilian and military purposes, it is labeled "dual use." In targeting terms, the term applies whether something is exclusively used for military purposes, is shared by civilian and military users, or is only used to a limited degree by the military—it qualifies as a targetable military objective. The civilian aspects of the target are relevant to the requirements for proportionality and precautions in attack as described below, but civilian use does not diminish its qualification as a military objective.

There is now widespread agreement that international humanitarian law applies in its entirety to cyber operations conducted during an armed conflict.

To take a simple example, many air-traffic-control and airspace-management systems serve both civilian and military aircraft. When this is the case, they are military objectives irrespective of the extent of civilian reliance on them. The communications lines to which the systems are connected are also dual-use and so too qualify as military objectives, as do any routers involved and any servers on which their data is stored. The harsh reality of twenty-first-century military cyber activity is that the heavy reliance on civilian products and infrastructure dramatically expands the universe of targetable objects, including systems on which important civilian functions rely.

The introduction of cyber capabilities into contemporary combat has also exacerbated a long-standing debate over the very notion of military objectives. All states and legal commentators agree that the term encompasses "war fighting" and "war supporting" objects. The former are those used to conduct military operations, whereas the latter include objects on which military operations rely in some relatively direct sense, such as factories that make munitions, weapons, or equipment (including computer equipment) used by the military, even when they also produce civilian products. They may not necessarily be attacked, because of the rule of proportionality and the requirement to take precautions, but they unquestionably qualify as military objectives. What is especially significant with regard to the war-supporting category in the cyber context is the extent to which the dependence of the armed forces on civilian products and infrastructure makes not only the objects in question legally targetable but also the facilities that produce them.

However, a third category, "war sustaining" objects, has generated widespread controversy. The U.S. Navy's *Commander's Handbook on the Law of Naval*

Operations, the most current U.S. manual addressing international humanitarian law, labels enemy war-sustaining objects as military objectives susceptible to lawful attack.[32] An annotated version of the previous edition of the handbook offers the example of cotton during the American Civil War.[33] But for the export of cotton, the Confederacy would have been unable to finance its war effort. Cotton exports, then, sustained the war; therefore, according to this approach, that industry was lawfully targetable. The contemporary analogue would be those aspects of an economy or governmental financial system on which the enemy relies to fund participation in the conflict. Obvious examples are the oil industries of countries that depend heavily on oil exports for funds; although the United States has never developed the concept with any granularity, other examples might also include the tax systems, financial systems, transport networks, and the like.

The significance of this approach in its application to the cyber environment cannot be overstated. Many war-sustaining targets cannot be struck kinetically in a fashion that would generate the same effects as cyber attacks. Consider the banking system. While kinetic attacks against banks would be highly disruptive, they would be unlikely, given the limitations of kinetic weaponry and the number of potential targets falling into this category, to create strategic effects on the order of undermining the sustainability of the war effort. However, cyber attacks that would, for instance, render dysfunctional the cyber infrastructure on which the banking system relies could bring the entire system down. The war-sustaining debate once loomed large; the ability of cyber operations to make war-sustaining attacks possible and effective at the operational and strategic levels will probably reinvigorate it. This is especially so in light of the fact that very few states have openly embraced the U.S. approach, thereby rendering the world's most cyber-empowered military an outlier on the matter. Ironically, the United States is itself highly vulnerable to attacks on its own "war sustaining" infrastructure, thereby raising the question whether its interpretation is ill-advised when applied to the cyber context.

In addition to objects, "persons" may qualify as lawful targets. It is, of course, possible to attack people by cyber means—for instance, by starting fires in facilities in which they are located, interfering with air-traffic control relied on by the aircraft transporting them, causing train collisions, and so forth. Additionally, individuals involved in cyber operations may be targeted kinetically once they have been identified and located. The issues are which people are targetable, as a matter of law, and when they may be targeted.

Obviously, members of the armed forces who conduct cyber operations are always targetable (unless hors de combat); they are combatants.[34] The rules regarding when civilians may be targeted are far more complex. To address this, the International Committee of the Red Cross sponsored a five-year (between

2003 and 2008) research study involving a group of forty international experts.[35] The experts agreed that members of an organized armed group, as defined above, are targetable while they are members of the group.[36] They disagreed, however, over precisely which members of the group were targetable. The ICRC was of the position that only those with a "continuous combat function" could be attacked. Such functions encompass roles in the group that involve activities likely to affect the enemy adversely.[37] Some individual participants in the project, including the author, countered that all members of a group formed to conduct hostilities (or the members of the armed wing of a group that includes other functions, such as Hamas) could be attacked, a position that appears to be favored by the United States, Israel, and other countries with significant combat experience.[38]

Applied to cyber, the approaches taken to direct participation lead in different directions. Take an organized armed group that conducts kinetic hostilities but also has "cyber operators." All those who conduct cyber operations against the enemy or who defend against the enemy's operations have continuous combat functions and therefore would be targetable by either approach. Other members may have such cyber-related duties as maintaining propaganda websites or recruiting members. By the ICRC approach, they do not have continuous combat functions and therefore would not be targetable unless they assumed such functions within the group. By the alternative approach, they could be attacked at any time, on the basis of their membership in the group.

Individuals unaffiliated with organized armed groups or, in the ICRC approach, who do not have continuous combat functions in such groups are targetable only "for such time" as they "take a direct part in hostilities."[39] An act amounts to direct participation when it meets three criteria.[40] First, it must either adversely affect the military operations or military capability of one of the parties to the conflict or injure or damage persons or objects protected by IHL, such as civilians and civilian objects.[41] It is important to understand that this criterion does not require that the activity qualify as an attack. As an example, gathering and disseminating tactical- and operational-level intelligence by cyber means suffices, as would probing enemy systems to identify vulnerabilities.

Second, the qualifying activity must directly cause the harm or be an integral component of the operation that does so.[42] There has been some controversy over this requirement with respect to the production of improvised explosive devices and services as voluntary human shields. Although both activities are sometimes characterized as indirect, the better position is that causal nexus between such activities and harm to the enemy is sufficiently direct.[43] The cyber analogue would be developing software specific to an attack on the enemy system or allowing cyber operations to be launched from one's home or business by others. One thing on which all parties agree is that factory workers do not qualify as

direct participants in hostilities. This being so, individuals involved in the general production of cyber infrastructure and equipment or in its general (as distinct from operational) maintenance are not targetable direct participants, although the *facilities* in which they operate qualify as military targets by virtue of their use.

The third requirement is that there be a nexus between the activity and the conflict.[44] In other words, the activity must be related to the ongoing conflict, as distinct from being an act of criminality or mere maliciousness. Although the facts of particular cases are sometimes difficult to discern, experts are in accord on this criterion.

It is difficult to overstate the importance of the direct-participation rules in the cyber context. The Georgia-Russia armed conflict, as well as subsequent ones, demonstrates that the civilian population is highly likely to become involved in the cyber aspects of the conflict. For instance, in the Georgia case a

To borrow a sports analogy, a team that takes the field without knowing the rules is usually going to lose, even if it is the better team.

website (StopGeorgia.ru) containing cyber targets and downloadable "malware" (malicious software) necessary to conduct cyber operations appeared online soon after the launch of kinetic operations.[45] The site proved effective in enabling cyber operations by civilians against Georgian military and civilian cyber targets. As this example illustrates, it is far easier to "cyber arm" a civilian population than to arm it with traditional weaponry. Additionally, many individuals have the know-how to conduct harmful cyber operations; all they require to begin participating in the hostilities is connectivity.

To compound matters, the scope of activities constituting direct participation in hostilities is broad. Conducting a simple denial-of-service operation, building a botnet* for use against the enemy, or texting to report visual sightings of enemy forces would all qualify as direct participation that justifies lethally attacking the civilian involved. As should be apparent, the direct-participation rule could make the pool of targetable individuals extremely large in future conflicts, far more than is the case in classic conflict.

That said, one possible obstacle to far-reaching application of the rule is that a direct participant is targetable only "for such time" as he or she is so participating.[46] The ICRC has suggested that this period includes measures preparatory to specific acts of direct participation, as well as deployment to and return from the activity concerned.[47] This is a rather impractical standard in the cyber context. Except for close-access operations (those involving in-person manipulation of cyber infrastructure), there is usually no deployment to and from cyber

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* "A network of compromised computers, the 'bots,' remotely controlled by the intruder, 'the botherder,' used to conduct coordinated [malicious] cyber operations" (*Tallinn Manual,* p. 257).

operations; they are conducted remotely. Thus, by the ICRC approach, the direct participant would have to be caught in the act, a standard that dramatically narrows the window of targetability. Further rendering this position impracticable is the fact that cyber operations can be very brief, sometimes so brief that an attacker cannot be identified to a level of reasonable confidence before the operation is over. Therefore, the better approach is to characterize an individual who engages in multiple cyber operations that are part of an ongoing cyber campaign as a direct participant targetable throughout the period of activity. Once individuals definitively withdraw from participation, they regain their protection from attack, but not before.[48]

THE WEAPON

While certain uses of cyber weapons (destructive or injurious malware), such as "attacking" civilians, violate IHL, cyber weapons may also be unlawful per se—that is, irrespective of actual use. The prohibition most relevant in this regard is that on indiscriminate means (weapons).[49] Weapons are prohibited when they either cannot be directed at a specific military objective or generate uncontrollable effects. In both cases, the weapons are indiscriminate in the sense that they are incapable of distinguishing between combatants and civilians or between civilian objects and military objectives. The paradigmatic example of the former is the V-2 rocket used during World War II, which had a guidance system so rudimentary that the rocket could not be reliably aimed at individual military objectives. Biological contagions illustrate the latter, because an attacker employing them cannot control their spread from human to human.

Cyber weapons may at times run afoul of these prohibitions. For example, consider malware intended for use against military cyber infrastructure linked to civilian networks. If the malware is designed to spread randomly throughout the system into which it is introduced, it is indiscriminate by nature and prohibited per se. Similarly, malware developed for placement on a website that is open to civilians and combatants alike would qualify as indiscriminate irrespective of any desire on the part of its user to affect only military systems. Perhaps the best-known indiscriminate cyber weapon is a malicious but seemingly innocuous e-mail attachment sent to a combatant's private e-mail account. Since the attacker has no control over to whom it might be forwarded, the e-mail, depending on its apparent nature (e.g., a humorous e-mail likely to be forwarded), would be indiscriminate.

It must be cautioned that the restrictions on indiscriminate weapons apply only when the cyber weapon in question is designed to conduct attacks. They do not bear on malware that does not cause injury, damage, or loss of system functionality. For instance, an e-mail attachment that when opened simply enables

future access by the sender would not be unlawful under IHL, even though the sender might not be able to control its further spread into civilian systems.

Because of this, as well as the fact that advanced cyber weapons likely to be used by states in armed conflict are by their nature designed to exploit particular vulnerabilities in specific systems, few cyber weapons violate the prohibition on indiscriminate weapons. For example, bespoke cyber weapons can be employed against closed military systems in which the risk of bleed-over into civilian networks is low. Of course, there is always some risk of unintentional or unanticipated migration into civilian systems, as illustrated by the Stuxnet malware, which, contrary to the intent of its designers, escaped the nuclear enrichment plant that had been targeted. Yet the risk of malfunction or unanticipated effects is a pervasive feature of weaponry writ large; only when the weapon is *incapable* of being aimed or controlled is it prohibited as indiscriminate.

PRECAUTIONS TO AVOID CIVILIAN HARM

Even when employing a lawful cyber weapon against a lawful target, an attacker must take "constant care" to "spare the civilian population, civilians and civilian objects."[50] To this end the law specifies a number of precautionary measures. The attacker must do everything feasible to verify that the target is not protected by IHL;[51] must select the weapon, tactic, and target that will minimize civilian harm without forfeiting military advantage;[52] must cancel or suspend an attack when reason to believe that the attack may be unlawful comes to light;[53] and must warn the civilian population of any attack that may affect it, unless doing so would not be feasible in the circumstances.[54]

Cyber capabilities raise a number of issues in this regard. They can, for example, be used to gather target information. If doing so would improve knowledge of the target's legal status (and if it is militarily feasible in the circumstances, given such factors as attack timing and competing demands on the cyber asset), the attacker must undertake the effort. Cyber operations may also provide a means of issuing warnings to the civilian population of both cyber and kinetic attack. For instance, general warnings of attack could be transmitted through civilian systems networked to military cyber infrastructure urging measures to be taken to safeguard them from the effects of attack on the military objectives.

However, the most significant impact of the precautions-in-attack rules lies in the requirement to consider alternative weapons, tactics, and targets to minimize civilian incidental harm. To illustrate, it may be possible to neutralize an integrated air-defense system by cyber means instead of by conducting kinetic attacks against its assorted components. Since cyber operations would in most cases be less likely to cause collateral damage, they would be required by law in lieu of kinetic alternatives, if their employment is feasible and militarily sensible. Cyber

operations may also open the possibility of striking different targets to achieve a desired effect. As an example, to disrupt enemy operations it may be possible to use cyber assets against communications infrastructure serving a command-and-control facility located near civilians, rather than attacking the facility itself, and achieve precisely the desired effect. Indeed, it could prove useful to preserve the facility to exploit it subsequently by using cyber means to transmit false instructions and other information to the enemy forces.

It must be emphasized that the precautions-in-attack rule regarding selection of weapons, tactics, and targets is obligatory. If cyber means are reasonably available, their use makes military sense in the circumstances, and their employment would not diminish the likelihood of operational success, the attacking force must use them. Failure to do so will violate the law. It is accordingly prudent for those who plan, approve, and execute military operations to have ready access to cyber expertise that can apprise them of cyber options. Ignorance is not an excuse for failure to comply with the rule in situations where the individual concerned should have known that a cyber operation was feasible in the circumstances and would likely have resulted in less collateral damage.

COLLATERAL DAMAGE

Once the attacker has surveyed the range of possible operations to achieve the desired effects and selected that viable alternative that best minimizes collateral damage, the operation is assessed against the rule of proportionality. This rule provides that "an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated" is prohibited.[55]

Two mistakes have proved common in application of the rule of proportionality. First, the rule is often mischaracterized as a balancing test in which military advantage and collateral damage are somehow accorded values that presumably can be compared. Not only is it difficult to imagine how this could be done in practice, but portraying proportionality as a balancing test runs counter to the plain text of the rule, which precludes an attack only when the collateral damage is "excessive." "Excessive" refers to a "significant imbalance," one in which it is reasonably clear that causing the expected degree of collateral damage is not justified by the military advantage the attacker hopes to attain.[56] Since cyber operations can generate effects that are not typically present in warfare and are therefore somewhat unfamiliar, fidelity to the "excessive" standard is essential, as it affords the attacker the correct degree of discretion.

Second, the rule is unfortunately often applied *post factum*. However, as is clear from its text, the proportionality assessment is made *ex ante* (i.e., at the

outset). Expected collateral damage is assessed against the *anticipated* military advantage. The actual collateral damage caused and the military advantage that actually results are relevant to evaluating the reasonableness of the attacker's pre-attack proportionality assessment but are not dispositive of whether the attacker has satisfied the rule of proportionality. This is again an important point in the cyber context, because of the widespread linkage of civilian and military systems and the difficulty an attacker may face in evaluating potential effects at the time the cyber mission is planned, approved, or executed.

Cyber activities have become an indelible facet of contemporary warfare, not just for cyber-empowered militaries such as that of the United States, but also for low-tech forces.

With respect to the substantive aspects of proportionality, cyber operations can serve to minimize collateral damage and therefore make compliance with the rule more likely. The networked nature of cyber infrastructure, however, heightens the risk of indirect effects on civilian systems. This is particularly true in light of the wide-ranging reliance of some militaries on dual-use cyber systems. To the extent to which indirect effects are foreseeable, they must be considered when making proportionality calculations. That said, the proportionality rule, like the prohibition on weapons generating uncontrollable effects, requires the consideration only of "loss of civilian life, injury to civilians," and "damage to civilian objects." Other, indirect effects of a cyber operation on civilians, civilian objects, and other persons and objects protected by IHL are not factored into the equation.

Cyber operations appeared on the battlefield in a dangerous interpretive void. As so often happens, technology has outpaced the law, or at least in this case full understanding of how extant law governs emerging cyber capabilities. Such a state of affairs is always strategically perilous. On the one hand, options that are in fact lawful are sometimes needlessly taken off the table out of misguided concern about their legality. On the other, unlawful options are at times seriously considered, thereby risking public and international condemnation should they be selected.

The normative fog of cyber war is beginning to clear, albeit slowly. This article has surveyed those aspects of international humanitarian law relevant to targeting, the activity during an armed conflict that poses the greatest risk to the defender and the civilian population. But targeting equally poses the greatest risk to the attacker, not only from an operational perspective, but also in terms of mission accomplishment. Characterization of a cyber operation as unlawful can quickly wipe away any gains that the operation has attained. It is accordingly essential that those occupying roles having responsibility for overseeing and

executing cyber operations develop a degree of understanding of their normative boundaries.

NOTES

The views expressed are those of the author in his personal capacity.

1. On the Georgian case, see Eneken Tikk, Kadri Kaska, and Liis Vihul, *International Cyber Incidents: Legal Considerations* (Tallinn, Est.: NATO Cooperative Cyber Defence Centre of Excellence [hereafter NATO CCD COE], 2010), pp. 66–90.

2. Ibid., pp. 14–34.

3. See Michael N. Schmitt, gen. ed., *Tallinn Manual on the International Law Applicable to Cyber Warfare* (Cambridge, U.K.: Cambridge Univ. Press, 2013) [hereafter *Tallinn Manual*]. For the Tallinn 2.0 project, see "Tallinn Manual," *CCDCOE: NATO Cooperative Cyber Defence Centre of Excellence,* ccdcoe.org/.

4. For a discussion of the law of targeting in general, see Michael N. Schmitt and Eric Widmar, "'On Target': Precision and Balance in the Contemporary Law of Targeting," *Journal of National Security Law and Policy* 7 (2014).

5. *Group of Governmental Experts on Developments in the Field of Information and Telecommunications in the Context of International Security,* UN Doc. A/68/98 (New York: 24 June 2013), para. 19, undocs.org/A/68/98 (regarding international law generally). This is the U.S. position; Harold Honju Koh (Legal Adviser, U.S. State Dept., remarks to USCYBERCOM Inter-Agency Legal Conference, 18 September 2012), available at www.state.gov/. The International Committee of the Red Cross has endorsed the same view; International Committee of the Red Cross [hereafter ICRC], *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts,* ICRC Doc. 31IC/11/5.1.2 (Geneva: 31 October 2011), p. 37.

6. Article 2 of the four 1949 Geneva Conventions addresses international armed conflict, while Article 3 deals with noninternational armed conflict. Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 12 August 1949, 6 UST 3114, 75 UNTS 31; Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, 12 August 1949, 6 UST 3217, 75 UNTS 85; Convention (III) Relative to the Treatment of Prisoners of War, 12 August 1949, 6 UST 3316, 75 UNTS 135; Convention (IV) Relative to the Protection of Civilian Persons in Time of War, 12 August 1949, 6 UST 3516, 75 UNTS 287.

7. On the topic generally, see Michael N. Schmitt, "Classification of Cyber Conflict," *International Law Studies* 89 (2013), p. 233.

8. For each of the norms, this article will cite the relevant treaty provision, although the United States is not a party to that most often cited, Additional Protocol I to the 1949 Geneva Conventions; the ICRC's Customary IHL study rule indicating that the norm is customary in nature, i.e., binding on all states; the relevant paragraph from the U.S. Navy's *Commander's Handbook on the Law of Naval Operations;* and the applicable *Tallinn Manual* rule reflecting its application in the cyber context. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, art. 2, 8 June 1977, 1125 UNTS 3 [hereafter Additional Protocol I]; Jean-Marie Henckaerts and Louise Doswald-Beck, eds., *Customary International Humanitarian Law* (Cambridge, U.K.: Cambridge Univ. Press for the ICRC, 2005), rule 1; U.S. Navy Dept. and U.S. Homeland Security Dept., *The Commander's Handbook on the Law of Naval Operations,* NWP 1-14M/MCWP 5-12.1/COMDTPUB P5800.7A (Washington, D.C.: 2007) [hereafter *Commander's Handbook*], para. 8.3; *Tallinn Manual,* rule 32.

9. *Tallinn Manual,* p. 82.

10. ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts,* p. 37.

11. Jean Pictet, ed., *Commentary: Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field* (Geneva: ICRC, 1952), p. 20.

12. But see discussion in Cordula Droege, "Get off My Cloud: Cyber Warfare, International Humanitarian Law, and the Protection of Civilians," *International Review of the Red Cross* 94, no. 886 (2012), p. 548.

13. Prosecutor v. Tadić, Case No. IT-94-1-l, Decision on Defence Motion for Interlocutory Appeal on Jurisdiction, p. 70 (International Criminal Tribunal for the former Yugoslavia, 2 October 1995).

14. Prosecutor v. Limaj, Case No. IT-03-66-T, Judgment, para. 89 (International Criminal Tribunal for the former Yugoslavia, 30 November 2005).

15. See, e.g., Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann, eds., *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (Geneva: ICRC, 1987) [hereafter *Additional Protocol Commentary*], p. 62; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-international Armed Conflicts, art. 1(1), 8 June 1977, 1125 UNTS 609 [hereafter Additional Protocol II].

16. Additional Protocol II, art. 1(2) (the provision is generally characterized as reflecting customary law regarding qualification as a noninternational armed conflict). See also Rome Statute of the International Criminal Court, art. 8.2(d), 17 July 1998, 2187 UNTS 90.

17. On the subject generally, see Michael N. Schmitt "'Attack' as a Term of Art in International Law: The Cyber Operations Context," in *Proceedings of the 4th International Conference on Cyber Conflict,* ed. Christian Czosseck, Rain Ottis, and Katharina Ziolkowski (Tallinn, Est.: NATO CCD CCOE, 2012), p. 283, available at ccdcoe.org/.

18. Additional Protocol I, art. 48. See also Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rules 1 & 7; *Tallinn Manual,* rule 31.

19. *Commander's Handbook,* para. 8.2. Customary international law is a form of law unique to international law. It "crystallizes" into a

norm binding on all states once widespread state practice that is engaged in out of a sense of legal obligation *(opinio juris)* exists. Although unwritten, it is of equal legal force to treaty law; Statute of the International Court of Justice, art. 38, 26 June 1945, 59 Stat. 1055, 33 UNTS 993.

20. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 ICJ 226, para. 78 (July 8).

21. Additional Protocol I, arts. 51(2), 52(1), 57, 58 [emphasis added].

22. Ibid., art. 49.

23. *Additional Protocol Commentary,* para. 1875; Michael Bothe et al., *New Rules for Victims of Armed Conflicts* (Leiden, Neth.: Martinus Nijhoff, 1982), p. 289. For attack as a violent act, see, e.g., Additional Protocol I, arts. 35, 51(1), 51(2), 55, 56(1).

24. *Tallinn Manual,* rule 30.

25. Quote in ibid., p. 258.

26. Ibid., p. 126.

27. For "tangible," *Additional Protocol Commentary,* paras. 2007–2008.

28. See discussion of this issue in Michael N. Schmitt, "The Notion of 'Objects' during Cyber Operations: A Riposte in Defence of Interpretive Precision," *Israel Law Review* 48 (forthcoming 2015).

29. *Tallinn Manual,* pp. 108–109.

30. Additional Protocol I, art. 52(1). See also Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 9; *Commander's Handbook,* para. 8.3; and *Tallinn Manual,* rule 38.

31. Additional Protocol I, art. 52(1). See also Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 8; *Commander's Handbook,* para. 8.2; and *Tallinn Manual,* rule 38.

32. *Commander's Handbook,* para. 8.2.

33. A. R. Thomas and James C. Duncan, eds., *Annotated Supplement to the Commander's Handbook on the Law of Naval Operations* (Newport, R.I.: Naval War College, 1999), p. 403.

34. Additional Protocol I, arts. 50(1), 51(2); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 1;

Commander's Handbook, para. 8.2.1; *Tallinn Manual,* rule 34.

35. Nils Melzer, ed., *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law* (Geneva: ICRC, 2009).

36. Ibid., p. 71. The author served as one of the experts. On the issue, see Kenneth Watkin, "Opportunity Lost: Organized Armed Groups and the ICRC 'Direct Participation in Hostilities Interpretive Guidance,'" *New York Journal of International Law and Politics* 42 (2010), p. 641.

37. Melzer, *Interpretive Guidance,* p. 71.

38. See discussion in Michael N. Schmitt, "The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis," *Harvard National Security Journal* 1, no. 5 (2010), pp. 21–24.

39. Additional Protocol I, art. 51(3); Additional Protocol II, art. 13(3); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 6; *Commander's Handbook,* para. 8.2.2; *Tallinn Manual,* rule 35.

40. See generally Michael N. Schmitt, "Deconstructing Direct Participation in Hostilities: The Constitutive Elements," *New York Journal of International Law and Politics* 42 (2010), p. 698.

41. Melzer, *Interpretive Guidance,* p. 47.

42. Ibid., p. 51.

43. See ibid., pp. 53–54, 56–57; and Schmitt, "Deconstructing Direct Participation in Hostilities," pp. 732–34.

44. Melzer, *Interpretive Guidance,* p. 58.

45. Tikk, Kaska, and Vihul, *International Cyber Incidents,* p. 73.

46. See generally Bill Boothby, "'And for Such Time As': The Time Dimension to Direct Participation in Hostilities," *New York Journal of International Law and Politics* 42 (2010), p. 741. Note that neutrality rules would also limit a state's options in striking back at direct participants operating from neutral territory; *Tallinn Manual,* chap. 7.

47. Melzer, *Interpretive Guidance,* pp. 69–73.

48. Other aspects of international law may also limit the targetability of an individual. For instance, as mentioned above, the law of neutrality will generally bar conducting operations against a person located on neutral territory; *Tallinn Manual,* rules 91–94.

49. Additional Protocol I, arts. 51(4)(b), (c); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 71; *Commander's Handbook,* para. 9.1.2; *Tallinn Manual,* rule 43.

50. Additional Protocol I, art. 57(1); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 15; *Commander's Handbook,* para. 8.1; *Tallinn Manual,* rule 52.

51. Additional Protocol I, art. 57(2)(a)(i); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 16; *Tallinn Manual,* rule 53.

52. Additional Protocol I, arts. 57(2)(a)(ii), 57(3); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rules 17, 21; *Tallinn Manual,* rules 54, 56.

53. Additional Protocol I, art. 57(2)(b); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 19; *Tallinn Manual,* rule 57.

54. Additional Protocol I, art. 57(2)(c); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 20; *Tallinn Manual,* rule 58.

55. Additional Protocol I, arts. 57(2)(a)(iii), 57(2)(b); Henckaerts and Doswald-Beck, *Customary International Humanitarian Law,* rule 14; *Commander's Handbook,* para. 8.3.1; *Tallinn Manual,* rule 51.

56. Harvard Program on Humanitarian Policy and Conflict Research, *Manual on International Law Applicable to Air and Missile Warfare* (Cambridge, U.K.: Cambridge Univ. Press, 2013), p. 96.

ON LITTORAL WARFARE

Milan Vego

Naval warfare in the littorals has much in common with war conducted on the open ocean. However, there are also some significant differences, due to the extremely complex, dynamic, and challenging physical environment of the former. The peculiarities of the physical environment in the littorals offer many challenges—but also opportunities—in the employment of naval forces and aircraft. Distinctions between characteristics of war on the open ocean and in the littorals must be thoroughly understood; otherwise, commanders and their staffs simply cannot plan or employ their forces properly.

Perhaps the most important prerequisite of success in littoral warfare is a solid theory developed ahead of time; otherwise it is not possible to organize and train forces properly. Littoral warfare requires the closest cooperation among the services, or "jointness." It also often requires close cooperation with forces of other nations.

The objectives of warfare in the littorals are generally similar or identical to those of war on the open ocean. Yet there are substantial differences in how these objectives are accomplished. In contrast to war on the open ocean, the most prevalent method of employment of combat forces in the littorals is tactical action; opportunities to plan and execute major naval/joint operations are

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relatively rare. Because of the rapidity and possibly drastic changes in the tactical and operational situations, warfare in the littorals requires a highly decentralized command and control (C2). This means a true application of German-style "mission command"—otherwise, success will be wanting.

IMPORTANCE

The political, military, demographic, and economic importance of the littorals has steadily increased over the past two decades. In 1991, the collapse of the Soviet Union and the Warsaw Pact brought an end to the Cold War. This in turn had a major impact on the international political and security environment. Animosities between various nation-states that had been held in check during the Cold War came into the open. An era of global certainty and predictability was replaced by one marked by uncertainty, turmoil, and chaos.[1] The threat of war between major powers has been reduced, but lesser threats to international order have proliferated, in growing scope, diversity, and frequency.[2] During the past decade Southwest Asia, the Greater Middle East, North Africa, the western Pacific, and most recently Eastern Europe have emerged as the new areas of tensions, conflict, and potentially even major regional wars. It appears that in case of a high-intensity conventional war, combat actions at sea would be predominantly conducted in the littoral waters.

About 80 percent of all countries border the sea, and approximately 95 percent of the world's population lives within six hundred miles of the coast. Some 60 percent of the world's politically significant urban areas are located within sixty miles of the coast, and 70 percent within three hundred miles.[3] About 80 percent of the world's capitals are in the littorals.[4] The littorals account for about 16 percent of the world's oceanic expanse.[5] Yet they are critically important because all seaborne trade originates and ends there. The sea remains the primary, and by far the most cost-effective, means for the movement of international trade. In 2013, about 80 percent of the global trade by volume was carried by ships.[6] The importance of the world's oceans and seas to the economic well-being and security of nations and to the projection of power has perhaps never been greater than it is today.

A blue-water navy now faces much greater and more-diverse threats in the littorals than in the past. This is especially the case in enclosed and semienclosed seas, such as the Persian (Arabian) Gulf. The threat is especially acute within and near the world's international straits, such as Hormuz and Malacca. The threat to one's forces steadily increases as one approaches an enemy coast. The weaker, defending side can have integrated a widely distributed reconnaissance/surveillance system with seagoing platforms, land-based aircraft, air and coastal defenses, ground troops, and special operations forces into an effective

multilayered defense. The defender can reach out much farther and more strongly than might be expected, catching the attacking force off guard.[7]

The primary antiaccess/area-denial (A2/AD) capabilities in the littorals are land-based aircraft, diesel-electric attack submarines (SSKs) fitted with air-independent propulsion (AIP), multipurpose corvettes, fast attack craft (FACs), coastal missile/gun batteries, unmanned aerial vehicles (UAVs), midget submarines, sophisticated mines, and medium- and short-range ballistic missiles (MRBMs/SRBMs). In addition, stealthy surface craft armed with small-caliber guns, short-range rockets, or even suicide boats can threaten not only one's commercial shipping but in some cases even larger surface combatants. One of the most serious threats to survivability of large surface ships and merchant shipping, however, is posed by long-range antiship cruise missiles (ASCMs). The most advanced ASCMs can be used against either ships or targets on land. They can be fired by submarines, surface ships, aircraft, and concealed coastal missile sites.

For example, the People's Republic of China is currently developing sophisticated A2/AD multilayered defenses extending several hundred miles from the coast. These defenses consist of space-, air-, and ground-based radars, and over-the-horizon radars, bombers, fighter-bombers, and multipurpose attack aircraft carrying air-to-surface missiles (ASMs) and ASCMs.[8] The Chinese navy is also introducing into service large numbers of modern surface combatants armed with ASCMs, as well as AIP SSKs armed with ASCMs, torpedoes, and mines. Approaches to the Chinese coast are defended by numerous coastal missile and gun batteries. The Chinese have very large inventories of highly advanced mines. They also have at their disposal several hundred SRBMs and MRBMs for use against targets on land. They have developed antiship ballistic missiles with ranges of a thousand miles plus, as well as a highly integrated air-defense system (IADS) with sophisticated surface-to-air missiles and fourth- and fifth-generation fighter aircraft. The Chinese A2/AD assets also include highly advanced and hardened C2 networks, antisatellite weapons, and cyberattack capabilities.[9]

Likewise, Iran is also trying to create multilayered defenses within the Strait of Hormuz and its approaches. Currently, the Iranian navy has in its inventory large numbers of ASCM-armed missile craft, several thousands of mines (both old and very advanced), and several quiet SSKs and midget submarines. ASCM batteries are deployed on the coast and islands within the strait. The Iranian A2/AD capabilities also include a number of land-based attack aircraft armed with ASCMs, UAVs, and several hundred SRBMs and MRBMs. They also have an increasingly sophisticated IADS.[10] The Islamic Revolutionary Guard Corps Navy operates a small number of ASM-armed boats, as well as stealthy torpedo boats; hundreds of small speedboats armed with machine guns, multiple rocket launchers, or ASMs;

remotely controlled radar decoy and explosive-filled boats; and a small number of semisubmersible attack craft.[11]

DEFINING THE TERM

The term "littoral" (from the Latin *litus,* "shore") is often used but is not always properly defined or understood. In its simplest definition, "littoral" means a "coastal region" or "refers to a shore."[12] In geographic terms, the term pertains to a coastline zone between extreme high and low tides. The U.S. military defines the littoral as consisting of two segments of the "operational" environment: seaward (the area from the open ocean to the shore that must be controlled to support operations ashore) and landward (the area inland from the shore that can be supported and defended directly from the sea).[13] Yet this usage is on one hand too broad and imprecise, and on the other, it overlooks a fairly wide range of relevant geographical conditions.

Littorals, properly speaking, encompass areas bordering the waters of open peripheral seas, large archipelagoes, and enclosed and semienclosed seas. Littorals bordering open oceans, such as the coasts of North and South America, Africa, and India, extend outward to the farthest extent of the continental shelf. The width of the continental shelf varies from less than a hundred miles off the west coast of North and South America to nearly eight hundred miles from the Arctic coast of North America and Eurasia. The average width of the continental shelf, however, is between two hundred and five hundred miles. The depth of water on the continental shelf averages 250 feet.[14]

"Peripheral" (or marginal) seas are parts of an ocean bordering the continental landmass and partially enclosed by peninsulas, island chains, or archipelagoes, such as the East China Sea and the South China Sea. They lie on downward-sloping portions of the continental shelf and are uniformly deep. Littorals also include large archipelagoes completely or partially surrounded by open ocean, such as the Malay (or Indonesian) and Solomons Archipelagoes.

The most complex physical environments for employment of naval forces are those of "enclosed" and "semienclosed" seas. An enclosed sea, such as the Baltic or the Adriatic, lies wholly within the continental shelf and is surrounded by a landmass except for a strait connecting it to an ocean or another enclosed or semienclosed sea. Because of their restricted communication with the open ocean, enclosed seas have small tidal ranges or are tideless.[15] Enclosed seas are also called "continental seas" if they rest on shallow depressions, as do the Sea of Azov and the Baltic. In contrast, a semienclosed, or partly enclosed, sea is contiguous to a continent and is linked by two or more straits/narrows to the open ocean; an example is the North Sea. Semienclosed seas are characterized by large tidal ranges.[16]

Enclosed and semienclosed seas are popularly called "narrow seas."[17] In the military meaning of the term, a narrow sea is a body of water that can be controlled from either side. Hence, this term can be properly applied to all enclosed and semienclosed seas, as well as to their long and narrow entrances (such as the English Channel, or La Manche), or certain restricted areas within a narrow sea (such as the Sicilian Narrows). It is in a narrow sea that a blue-water navy, like the U.S. Navy, would likely have the most difficulty in projecting its power ashore.

OPERATING AREA

The operating areas in the littorals differ considerably in terms of their sizes, distances, hydrography, oceanography, and the proximity of the landmass to the open ocean. The oceans themselves are characterized by huge size and distances measured in thousands of miles; the Atlantic Ocean covers an area of some 41.0 million square miles and varies in width from 1,770 miles (between Brazil and Liberia) to three thousand miles (between the east coast of the United States and North Africa). They are uniformly deep, except for the waters off the continents. In contrast, a typical narrow sea presents a much smaller area to be controlled or defended. For example, the Baltic Sea covers 163,000 square miles, extends along its north–south axis for about 920 nautical miles (nm), and has an average width a little over 105 nm. The Persian (Arabian) Gulf is about 615 miles long and between forty and 220 miles wide, with an area of about 92,600 square miles.[18] With its 950,000 square miles, the Mediterranean Sea is the largest of all narrow seas. It extends west to east more than 2,400 miles, and its maximum width is about a thousand miles. The Mediterranean encompasses several smaller narrow seas (the Tyrrhenian, Ionian, Adriatic, and Aegean).

In an enclosed or semienclosed sea, the distances separating various points on the opposing shores are fairly short. For example, in the Baltic Sea, the distance between Kiel and Helsinki is about 625 nm; the port of Tallinn (formerly Reval) is only about 220 nm from Stockholm; some 230 nm separate Copenhagen and Rostock. For the North Sea, the British port of Hull is only about 280 nm from the German port of Emden and some 210 nm from Ostend. The German port of Cuxhaven lies about 475 nm from Scapa Flow, in the Orkneys. Such short distances considerably affect the employment of surface ships, submarines, and aircraft: transit times are short, and high sustained speeds are less critical than in transiting oceans. Small areas combined with short distances allow employment of not only large but also small surface ships and submarines. Units can be deployed and redeployed at short notice and within hours. Submarines, by conducting attacks in various parts of a narrow sea, can create an impression that a larger number of them are present than is the case.[19]

The short distances in a typical narrow sea also allow the use of all types of fixed-wing aircraft and helicopters. Short flying times allow more sorties and longer time over target areas. Aircraft can be quickly deployed and redeployed between various points. The probability of achieving surprise is also greatly enhanced, especially if aircraft approach targets at low altitudes or over land. In addition, a damaged aircraft has a much better chance of reaching the safety of its base than if operating over the open ocean. Finally, short distances allow the side that is stronger in the air to dominate a theater to a far greater degree than on the open ocean.

Lines of operation and lines of communications in enclosed-sea theaters are fewer in number and much shorter than on the open ocean. If a coast is fronted by islands or an archipelago, these lines are predictable to the enemy because they are few in number. Few, if any, alternatives are available. But in a typical narrow sea, shipping routes assume very different patterns: they run along the coast (i.e., longitudinally), from one shore to the opposite one (laterally), or again longitudinally between sea exit(s) and ports of destination within a given narrow sea. They usually have the largest traffic volume and require, of the three categories of routes, the greatest effort to control fully. Longitudinal sea routes, from one port to another along one's own coastline within the effective range of coastal defenses, are generally easier to protect. Where coastal waters are deep, as off Norway, longitudinal sea routes can run very close to shore. It is even easier to protect longitudinal sea routes if the coast is fronted by several island rows, as is the case along the Dalmatian coast. However, longitudinal sea routes are long and few in number; hence, they offer many opportunities for the enemy attack. Attackers can choose parts of the route that are exposed or poorly defended, as well as the time. They have much greater diversity of targets, because coastal routes would be used by many types of commercial and military shipping.[20]

Lateral routes are shorter and more numerous than are coastal routes. However, they are also much more vulnerable to an enemy attack because they run across the high seas, where their defense is difficult; they can be secured usually only near the ports of origin and destination. Friendly ships using lateral routes would be unable to maneuver and seek protection closer to their own coast.[21]

Narrow seas are characterized by the presence of large numbers of friendly, enemy, and neutral commercial vessels, warships, and auxiliaries. In peacetime, waters near coasts are typically crowded with fishing, resource-exploitation, and scientific vessels plus numerous recreational craft. For example, some ninety-three thousand ships passed through the Skaw and the Kiel Canal in 2009.[22] In the Mediterranean, some two hundred thousand merchant vessels larger than a hundred tons, or about 30 percent of the world's maritime shipping, transit every year. Most of that traffic is bound for areas outside the Mediterranean.[23]

The straits connecting narrow seas to the open ocean or other narrow seas are also called "choke points."[24] Density of shipping at the approaches to and within the international straits is higher than on the open ocean. There are several thousand straits in the world, but only between 95 and 121 have international importance.[25] International straits are both the hubs and the most vulnerable segments of sea communications. Several of these—including, notably, those of Hormuz, Malacca, and Singapore—are considered global choke points of world trade, with extremely large economic, political, and military importance. For example, in 2011 seventeen million barrels per day (bb/d), about 35 percent of all crude-oil traffic worldwide, passed through the Strait of Hormuz.[26] In 2011, about 15.2 million bb/d of crude oil passed through the Strait of Malacca.[27] Some sixty thousand ships pass through it each year.[28] If that strait were closed for any reason, almost half of the world's merchant shipping would have to use alternative choke points—specifically, the Lombok Strait (between Bali and Lombok) and the Sunda Strait (between Java and Sumatra).[29] About 3.4 million bb/d of oil was transported through the eighteen-mile-wide Bab el Mandeb in 2011.[30] In 2010, some 2.9 million bb/d passed through the Turkish Straits, seventeen miles long and only half a mile wide; each year some fifty thousand ships, including five thousand tankers, transit this navigationally very difficult waterway.[31]

Straits/narrows are the keys to controlling naval and commercial shipping movements from and to enclosed- or semienclosed-sea theaters. A belligerent that controls both sides of a strait can employ naval forces and establish coastal defenses to prevent an attacker from entering a given enclosed-sea theater. The location, length, width, and depth of a choke point largely determine its economic and military importance. A strait that, like the Strait of Hormuz or the Danish straits, is the only access to an enclosed sea has particular significance.

The length of important straits varies greatly, from the thousand-mile-long Mozambique Channel to the only three-mile-long Strait of Tiran (the entry to the Gulf of Aqaba). The Persian Gulf is linked to the Arabian Sea by the Strait of Hormuz, 120 miles long and twenty-four to sixty miles wide.[32] The 550-mile-long strait of Malacca connects the Indian Ocean and the South China Sea.

Some international straits are very narrow, which greatly affects a ship's speed and maneuverability. For example, the Strait of Malacca is only about 1.5 nm wide at its narrowest point, as is the Phillip Channel in the Singapore Strait. Shallow depth adds to the navigational hazards of some straits; for example, the Strait of Malacca is only seventy to 120 feet deep, while the Bosporus and Dardanelles are 110 and 160 feet deep, respectively.[33] Some straits, however, are very deep, like Gibraltar (1,100 feet) and Lombok (one thousand feet). Navigation through some important straits is made difficult by strong currents. For example, the current in the Shimonoseki Strait (between Honshu and Kyushu) runs at up to eight knots.

The San Bernardino Strait (between Bicol Island, Luzon, and Samar) has tidal currents of four to eight knots.

The configuration and physical features of the coast affect in important ways the length and directional orientation of bases of operations, the organization of surveillance, and coastal defense. The employment of naval forces and aircraft in a narrow sea is greatly affected by length of the coastline, the number and size of natural harbors, the terrain, the presence of offshore islands, the abundance or scarcity of natural resources, and inland communications. When a coast is backed by high mountain ridges and washed by deep water, as is Norway's coast, naval and commercial vessels can sail close to shore, where detection by shipborne radar is more difficult. On elevated or mountainous coasts, communications are often scarce or entirely lacking. If a mountain chain runs close and parallel to the coast, the roads and railroads usually run in the same direction. A steep, rocky, and highly indented coast, or one with fjords separated by rocky headlands and numerous rivers, makes longitudinal communications difficult, while rocky beaches make it difficult to carry out conventional, large-scale amphibious landings.

Generally, a low-lying coast is favorable for the development of the road/railroad network, which can in turn greatly reduce the need for coastal shipping. Conversely, a coast with poor land communications means greater reliance on coastal shipping to transport military and commercial cargo. Land traffic in the littorals can easily be interrupted for long periods, especially if the principal roads or railways run close and parallel to a coast backed by steep, high mountains.

A flat coast with few or no offshore islands is generally favorable to landings by sizable forces. It also facilitates the movement of forces into the interior. Generally, coral reefs and very shallow water extending far from shore favor defense against conventional amphibious assaults. Swamps and marshes in the coastal area can considerably impede or canalize vehicular traffic, especially heavy armor and mechanized forces.

A highly indented coast backed by high ground allows the construction of underground shelters for submarines and small surface combatants. Shelters, usually built of concrete and fitted with heavy steel doors, provide protection against air attack, even with nuclear weapons. They also can offer a range of repair facilities and crew accommodation for several weeks. For example, Sweden has built along its coast what is probably the world's most extensive and sophisticated underground facility at Muskö, near Stockholm. Until much of it was closed in 2004, when the Swedish navy decided to use only its two major naval bases, at Karlskrona and Berga, Muskö had three docks and was able to handle fast attack craft, submarines, and destroyers. China is reportedly building a secret underground naval base at Sanya, on the southern tip of Hainan. There massive

sixty-foot-high tunnel entrances are being built into hillsides. The base would reportedly accommodate up to twenty nuclear-powered submarines.[34]

Offshore islands are potentially a great obstacle to any attacker. At the same time, however, they require larger forces for defense. For example, Finland's coast is fronted by some 790 islands larger than 0.4 square miles, plus some 178,500 islets; along Sweden's coast are about 98,370 islands/islets. The Stockholm Archipelago alone consists of about thirty thousand islands/islets. Sweden's coastline, including islands, stretches for some 37,755 miles. Large archipelagoes, as in the Aegean, include many uninhabited islands, which greatly complicate the problem of defense. In contrast, a long coast without offshore islands, such as the Iranian coast in the Persian (Arabian) Gulf, is highly vulnerable to attack from the sea.

Narrow passages between islands can be blocked by mines and coastal missile or gun batteries. Numerous islands canalize the movements of the enemy forces. Several island chains running parallel with the mainland coast extend the defensive depth of the coastal area. A multitude of offshore islands offers the possibility of dispersing bases and thereby making them less vulnerable; small surface combatants can change bases or anchorages in hours. Protected bays or channels offer refuges for ships, and islands conceal the movements of surface ships and troop transports.[35]

If islands extend transversely from the coast, as off Dalmatia's coast, the channels separating them are usually wide and deep, allowing quick, concealed, and relatively easy deployment and redeployment of naval forces. An archipelago, such as the Aegean (1,415 islands) or the Malay (twenty-five thousand, between the Indian and the Pacific Oceans), allows great flexibility in the selection of lines of operation and easy and secure "castling" (leapfrogging) of naval forces. It also provides excellent opportunities for mines in the defense of naval bases, commercial ports, and sea traffic. In general, the more numerous the islands, the more difficult the detection of small surface combatants.

Most narrow seas are characterized by shallow water (less than two hundred fathoms deep). For example, about 60 percent of the Baltic Sea is less than 150 feet deep. The depth of water in the Gulf of Finland varies from 110 to just over three hundred feet. The average depth of the Adriatic Sea is about 650 feet.[36] In the Persian (Arabian) Gulf, the mean depth is about eighty feet, and the water is rarely deeper than three hundred feet; the deepest water is found off the Iranian coast, while depths off Saudi Arabia's coast average 110 feet. Maximum depth in the Yellow Sea is 460 feet, and the mean depth is only 150 feet.[37]

Shallow water restricts, and can even preclude, the employment of major surface combatants. The speed of large surface ships must be considerably reduced when transiting very shallow waters (ten-to-forty-foot depths). In confined waters, such as channels, a ship's speed can be reduced up to 60 percent. The

effects of water depth are rather significant for surface ships at speeds higher than twenty-five knots. For example, at thirty knots in eighty-foot depths, wave resistance is almost three times greater than in 115-foot water and five times more than in deep water (more than 1,200 feet).[38] A surface ship proceeding at five, ten, fifteen, or twenty knots requires minimum depths of thirteen, fifty-six, 125, and 220 feet, respectively.[39]

Safe operations by a submarine require certain clearances above the mast and under the keel. Normally, a nuclear-powered attack submarine (SSN) should have a minimum of fifty feet of water under its keel; an SSK needs from thirty-five to forty feet. This figure does not include the much greater depth required for a submarine to maneuver in evading attack. Depending on the water transparency, a submarine may need to operate several dozen feet farther down to prevent detection from the air. At periscope a submarine's keel depth is from fifty to sixty-five feet, depending on sea state and periscope/mast extension. For example, the periscope depth for the German Type 212A is about forty feet. Reportedly, the periscope depth for an American SSN is less than a hundred feet (from the keel).

The character of the seabed can either facilitate submarine operations or make them very difficult. In general, a smooth seafloor allows submarines to lie on the bottom during a pursuit. The presence of shipwrecks can provide a hiding place. An SSK can use bathymetry, bottom composition, topography, and nearby wrecks to hide from pursuers.[40] It would be difficult to detect if it settled on the seabed in less than a hundred feet of water, switched off its engines, and shut all seawater inlets. A bottom-lying SSK looks to sensors like a sunken ship; only a human operator can tell the difference. An SSN, however, cannot sit on the sea bottom, for fear of clogging vital inlets to condensers.[41]

Shallow water considerably complicates the use of less advanced torpedoes by surface combatants and submarines. For example, most advanced lightweight torpedoes, such as the U.S. Mark 46 Mod5A (SW), specially designed for use in shallow water, require a minimum depth of about 148 feet when fired by a surface ship. In contrast, advanced heavyweight torpedoes, such as the U.S. Mark 48 Mod 6 AT, require much greater minimum depth for launching because of their initial negative buoyancy. Yet some heavyweight torpedoes—for example, the German WASS Black Shark—can be reportedly fired even from a bottom-sitting boat.[42]

Shallow water facilitates the use of all types of mines. For example, bottom mines for use against enemy submarines can be laid to a depth of about 660 feet, yet their effectiveness diminishes significantly below 230 feet. Rocket-propelled rising mines can be used down to 650 feet. Antisubmarine rising mines fitted with rocket-propelled torpedoes may be laid in water depths exceeding 3,300 feet. Modern moored mines could be laid at depths from fifteen feet to, depending on their size, five thousand feet or even more. Pressure influence mines

cannot be laid at depths greater than a hundred to 165 feet; otherwise they would be ineffective against enemy surface ships.[43]

In general, electronic sensors when used close to a coast are prone to degradation due to a variety of climatic, electromagnetic (EM), and atmospheric anomalies, the presence of a large landmass, human-made clutter, and the proximity of multiple EM sources.[44] The performance of radar, electronic support measures (ESM), and communications systems varies with temperature, pressure, humidity, cloud formation, and storm activity. Another problem is presence of a large number of cellular telephone networks and such commercial land-based emitters as television, commercial aircraft, and ships. This, in turn, creates substantial difficulties in using ESM sensors to sort out and identify emitters or signals of interest.

The combined effect in the littorals of a considerable difference between the temperature of the air and that of the sea and the proximity of landmass often causes nonstandard propagation of EM waves. "Subrefraction" occurs when air temperature decreases or humidity increases rapidly with height, causing EM waves to bend upward or away from the earth's surface. "Super-refraction" takes place when the relative humidity of the air steadily decreases with altitude instead of remaining constant or when the air temperature decreases at a rate less than standard. EM waves can then bend down much more sharply, striking the sea surface, reflecting upward again, curving back down to the sea surface, and so on continuously. Both of these phenomena significantly affect the range of radar and radio communications, and electro-optical (EO) sensors. Subrefraction causes shorter ranges for radars operating within such a layer; super-refraction would extend the range of radars, but targets would appear closer and at higher altitudes than actual.[45] Subrefractive EO propagation causes reduced detection ranges against low-elevation air threats, while super-refractive propagation can present the threat against a background of strong solar glint or infrared clutter.[46]

The extreme case of super-refraction, known as "ducting," or trapping, occurs in conditions of temperature inversion—that is, when a warmer layer of air lies above a cooler layer and EM waves are trapped near the surface. If a trapping layer exists, a duct may form, and it may extend above the trapping layer.[47] Under some conditions ducts significantly extend the propagation of EM waves, but they can also create blind zones where radar cannot detect targets. For example, radar might detect an aircraft flying at five thousand feet at ninety nautical miles but not one at six thousand feet at the same range.[48]

Large land/sea temperature differences often occur in the littorals. This phenomenon is caused by heating over land surfaces during the day while the temperature over water remains fairly constant, generating diurnal lateral movements of air—sea breezes during the day and land breezes at night.[49] Near-shore breezes can cause surface ducts and thereby degrade radar performance.

The performance of the shipboard radars against low-flying aerial targets close to the coast is also adversely affected by land clutter.[50] Doppler radars are able to detect larger targets in the presence of land clutter. In contrast, pulsed radars (which lack perfect waveform stability because the clutter signal is often much stronger than the target signal) have great difficulty in detecting small targets even after the effect of clutter is greatly minimized.[51] Very often false targets are created and actual targets masked. The Falklands/Malvinas War of 1982 illustrates the great problems of using shipborne radars for detection and identification of low-flying targets in the presence of land clutter.[52]

The irregular distribution of shapes and sizes of waves, wind speed and direction, swell height and direction, and biologics can greatly affect radar returns from the sea surface, causing sea clutter. Radar return from the sea surface depends on operating frequency, polarization, and grazing angle. Sea clutter causes difficulties in discriminating small targets, such as submarine periscopes, from background noise. Also, multiple false targets would make detection of targets with low radar cross section (RCS) extremely difficult.[53]

CHARACTERISTICS

Warfare in the littorals has certain characteristics not found on the open ocean. These distinctions are especially pronounced in narrow seas, owing to their small size, short distances, the presence (often) of many offshore islands, and shallowness of water. The operating areas of both enemy and friendly forces encompass not only littoral waters but also coasts, offshore islands, and parts in the interior within the range of shipborne weapons.

Littorals are not isolated theaters of war; they lie on the flanks of troops operating along the coast. In the Italian campaign in 1943–45, for example, the flanks of the Allied armies were on Italy's western and eastern coasts. In the German-Soviet war, the strategic flanks of both sides were the Baltic and Black Seas.[54] Likewise, during the Korean War, 1950–53, the coasts of the Korean Peninsula bordering the Sea of Japan (East Sea, for the Koreans) and the Yellow Sea (Western Sea) represented the flanks of both the United Nations and the North Korean / Chinese ground forces.

In contrast to war on the open ocean, combat action in the littorals can encompass a major part, or even the whole of, a theater, as the North Sea in 1914–18 and the Solomons campaign of 1942–44 illustrate. Numerous actions between small surface combatants took place in the English Channel in 1940–44, the Sicilian Narrows in 1940–43, the Black Sea in 1941–44, and the Adriatic in 1943–45. As noted above, lines of operation in a typical narrow sea and, hence, deployment and redeployment times are rather short. In the struggle for control of the English Channel in 1940–44, lines of operation for the German forces varied from about

eighty-four nautical miles at the latitude of Brest to only eighteen at the narrowest part of the Channel.[55]

The restricted maneuvering space in a typical narrow sea, especially with shoals and reefs, is even more confined if one or both opponents lay mines. For example, in the English Channel the operational areas for both the Germans and Allied forces were much reduced by, aside from the many navigational hazards, extensive mined areas. Most of the mine barriers laid by both sides were in the middle of the English Channel.[56] The opposing naval forces were forced to concentrate rather than disperse, facilitating mutual support but making them more vulnerable to attack.

The small size of the typical narrow sea allows both the attacker and the defender to keep a large part of the theater under constant observation. Even the weaker side can conduct continuous reconnaissance throughout the theater. Hence, large surface ships would have difficulty remaining undetected.[57] Smaller hostile ships, however, can take advantage of the high density of shipping traffic combined with the presence of offshore islands and islets to conceal their presence.[58] The presence of noncombatants also makes identification of targets much more complicated than on the open ocean. Shipborne radars would detect low-flying aircraft or ASCMs at much shorter distances than their nominal maximum effective ranges because of the presence of land clutter. Likewise, airborne radars have problems detecting aerial targets flying either very low or over terrain with highly reflective properties.

Detection of the enemy submarines and mines in the littorals is also much more complex and uncertain than on the open ocean. This is largely the result of the prevalent shallowness of water, peculiarities of hydrographic and oceanographic conditions, and high ambient noise. In shallow water, sound propagation is generally difficult to predict, because of great seasonal and daily variations of sea temperature, salinity, waves, tides and currents, any influx of freshwater, and the reflection and absorption due to variations of the seabed. In addition, natural and man-made ambient noise compounds the problem of hunting for submarines in shallow waters.

One of the major problems in using acoustic sensors in shallow water for classification of contacts is a high false-alarm rate. An indented coast fronted by numerous islands and islets makes classifying sonar contacts extremely difficult. In general, the longer a sonar's detection range, notably for passive sonar, the greater the problem; the number of contacts increases approximately as the square of detection range.[59] Many false sonar contacts result from the high irregularity of the sea bottom; underwater cliffs and slopes may resemble submarines lying close to or on the bottom.[60] False contacts result in not only wasted time but unnecessary expenditure of fuel, sonobuoys, and weapons.[61] If the sea bottom is composed of

metalliferous rock, magnetic anomaly detectors often produce false alarms.[62] As a result of all the above, detection range of submarines by surface ships is much shorter in shallow water than on the open ocean, especially against quiet SSKs. An SSK that is motionless or moving at less than five knots and is positioned near wrecks or rocky pinnacles is almost impossible to detect with acoustic sensors.[63] Also, submarine-versus-submarine detection ranges are very short because of their improved stealth features, meaning, again, much shorter reaction times.[64]

In comparison to war on the open ocean, warning and reaction time in the littorals is much reduced by short distances and the high speed of modern platforms and weapons. This is especially the case in narrow seas with islands where small surface combatants can hide and attack suddenly at short range. ASCMs can be launched from concealed positions behind islands, the terrain being used to mask their trajectories, leaving very little time for targets to react. The problem of early detection is compounded by land clutter, plus, in some cases, heavy seas.

In the littorals, surface ships are especially vulnerable to the attacks by ASCMs and torpedoes. Supersonic ASCMs fly at very low altitude and can conduct complicated evasive maneuvers in the terminal phase of their flight. For example, an ASCM flying at Mach 2.5 and at low altitude would be detected at a range of fifteen miles; it would take only thirty-three seconds to reach its intended target. Advanced ASCMs can be programmed to escape detection by abruptly changing direction and attacking a different target in the same general area. A target would have great difficulty countering ASCMs fired simultaneously or in a short interval by a combination of aircraft, surface ships, submarines, and coastal sites.

The same challenge of short reaction time applies to heavyweight torpedoes. A typical distance for launching a heavyweight torpedo from a submarine is between 5.0 and 8.0 nm. However, this distance is considerably shorter when torpedoes are launched by a small surface combatant or a submarine in an ambush position.

Missions of small surface combatants in littorals are typically short, because of their short range and low endurance. For example, a combat mission for a missile craft could vary from several to about a dozen hours. The duration of a mission by a small surface combatant would depend not only on its endurance but also on the length of the period of darkness. The latter depends on the time of year and geographic latitude of the operating area. For example, because of Allied air superiority after the summer of 1942, German S-boats (*Schnellbooten,* torpedo boats) based on the occupied coasts of France, Belgium, and the Netherlands were able to operate only at night. During short summer nights the S-boats concentrated their attacks against convoys in the Strait of Dover and the approaches to Plymouth, while in the long winter nights, S-boats based in the Netherlands extended their missions up to the estuary of the River Humber, in England.[65]

The situation on the surface greatly depends on those in the air and on land. Control of a given part of the theater will be directly related to the size of forces present, and the duration of their stay.[66] The high speeds of modern surface combatants and their ability to combine maneuver and "fires," together with the features of the physical environment, potentially allow one side to achieve surprise. The weaker side may not operate in the way one thinks it would, using asymmetric responses to neutralize or even nullify the advantages normally enjoyed by a blue-water navy. The weaker side would try to inflict large losses on the stronger. Its FACs and SSKs can attack from an ambushing position close to the coast or within a group of islands.

One of the main features of naval combat in the littorals generally is frequent and radical change in the tactical and operational situations. In general in the littorals, frequency of contact between opposing forces would be much higher than on the open ocean.[67] Combat there—thanks to long-range, highly precise, and ever more lethal weapons, such as ASCMs, land-attack cruise missiles, advanced torpedoes, and other smart weapons—would be most likely decisive. Most surface combat would be fought at close range; encounters would be sudden, short, and violent. In a war between two strong opponents, the intensity of surface and air combat, and with it consumption of fuel and ammunition, would be very high. As a result, logistical sustainment would be critically important to success.

Because of the ever-present and serious threat from the air, most surface actions in the littorals would take place at night or in bad weather. For example, prior to 1942 British coastal forces operating in the English Channel and the North Sea were highly vulnerable to attack by the Luftwaffe aircraft during the day unless provided effective fighter cover.[68] Hence, most of their missions were conducted during the night. By the summer of 1942, the Luftwaffe's superiority over the Channel had ended. From August 1942 to July 1943, when the majority of German shipping moved along the coast from the Scheldt River estuary southward through the Channel toward southern France, all actions by German surface forces were conducted during the night. This required a high degree of navigational skill because most navigational lights had been shut down. Yet despite all defensive measures, there were frequent attacks by the British coastal forces, mostly motor gunboats and motor launches. The British had a fairly good knowledge of the German routes and used radar to select ambush positions.[69] The British coastal forces too had to operate mostly at night, because a great threat from Luftwaffe aircraft remained.[70]

During the struggle for Crete in May 1941, Admiral Andrew Cunningham, Commander-in-Chief (CINC) of the Mediterranean Fleet, informed the Admiralty in London that the scale of enemy air attacks prevented his ships from operating during daylight hours in the Aegean or off the coasts of Crete. Hence,

he warned, the British navy could no longer guarantee that it could prevent sea-borne landings without incurring losses that might lead to sacrificing command of the eastern Mediterranean.[71] During the Yom Kippur / Ramadan War of October 1973 the threat from the air forced the Israeli navy to carry out most of its missions during the night hours, as naval battles off Latakia on 7/8 October and Damietta–Baltim on 8/9 October (discussed below) illustrate.

PREREQUISITES

The main prerequisites for success in littoral warfare are suitable and diverse platforms, weapons, and sensors; robust command organization; close cooperation among friendly forces; air superiority; well developed theory; and sound doctrine.

The physical environment in the littorals, in typical narrow seas particularly, requires a naval force differently composed from that employed on the open ocean. Obviously, large surface combatants, such as aircraft carriers, cruisers, and SSNs, could if necessary operate in a typical narrow sea in a time of high-intensity conventional war. However, as noted, their speed and maneuverability would be drastically reduced. They would be also very vulnerable to ASCMs launched by aircraft, small surface combatants, SSKs, and coastal batteries, as well as to small-boat swarms and advanced mines. The risks of operating highly capable but also very expensive platforms outweigh potential benefits. A surface combatant operating in narrow seas should perhaps not exceed 1,200 to 1,500 tons. Common to all ships optimally designed for operations in the littorals are small size, moderately high speed, shallow draft, high maneuverability, moderate range and endurance, and low signatures (radar, infrared, acoustic, and magnetic). Advanced SSKs, light frigates (FFLs), multipurpose corvettes, and FACs are much better suited for combat in littoral waters. Small surface combatants can be employed effectively in shallow waters where large surface ships cannot operate or where risks for them are too high. They are generally more suitable for conducting ASW, defense and protection of friendly shipping, and anti-combat-craft defense. They are also much less expensive and can be built or acquired in larger numbers. Yet for all their advantages, small surface combatants also have a number of deficiencies. They have little space, small buoyancy reserve, and inadequate structural integrity. They are extremely vulnerable to the attacks from the air and by larger counterparts. In case of a hit by a missile or bomb, a small surface combatant has little chance to survive. Because of their small size, enclosed-sea theaters are almost ideal for the employment of land-based attack aircraft, fighters, patrol aircraft, helicopters, and UAVs. Plainly, strategic mobility plays no role for a small coastal navy in the littorals. Because of the shorter distances involved, tactical mobility is almost entirely dependent on the capability to move at maximum

speed. In general, high speed for a surface combatant incurs much higher construction costs, greater power requirements, exorbitant fuel consumption, reduced range and payload, increased maintenance, and lower stealth. But for small surface combatants, such as multipurpose corvettes and FACs, high speed is critical not only for mobility but for survivability; they lack staying power and have to avoid pursuit after launching their missiles or torpedoes. Major surface combatants, in contrast, would rarely use speeds higher than, say, thirty knots in a typical narrow sea, because of the shallowness of the water. For them, sustained transit speed, range, and endurance are far more important, because they often have to transit long distances before reaching their operating areas.

Hence, the U.S. Navy did not make a good decision in specifying a speed of more than forty-five knots for its new Littoral Combat Ship (LCS); the result is a platform optimized neither as a small nor as a large combatant. Reportedly the LCS can sail about 1,250 nm at its sprint speed.[72] However, its range at maximum speed is likely to be much shorter. At its sustained speed of eighteen knots, the three-thousand-ton LCS 1 (first of the USS *Freedom* class) can sail 3,500 nm, while the 3,100-ton LCS 2 (the *Independence* class) has a range of about 4,500 nm. In the operating area, according to some reports, the LCS has to be refueled every three days.[73] Further, it cannot operate at its maximum speed in water less than twenty feet deep or in traffic or bad weather (sea state 4 and higher).

As on the open ocean, success in littoral warfare requires employment of diverse combat arms, the deficiencies of each compensated by the strengths of others. This means that not only the weaker but the stronger side as well should possess small surface combatants, advanced SSKs, land-based attack aircraft and helicopters, and UAVs. Yet no single type of surface combatant, however advanced, is a panacea, nor can it offset the absence of forces optimally suited for operations in the littorals. In fact, combat elements of other services and branches —air, army, marines, and special operations forces—should be employed in the littorals as well.

For successful combat in the littorals, a simple and streamlined littoral command structure, with the fewest possible intermediate levels, should be established. For a blue-water navy, like the U.S. Navy, such a command should be composed of multiservice forces under a joint force commander (JFC) and directly subordinate to the theater commander. At the tactical level, the optimal solution is to subordinate directly several joint or combined task forces to the littoral command. Each of these should be composed of two types of elements, arbitrarily called a distant cover and support forces and the littoral combat groups (LCGs). The distant cover and support forces would consist, depending on the mission and the situation, of carrier strike groups, expeditionary strike groups, surface action groups, SSNs, and marine expeditionary units,

plus air force attack aircraft and heavy bombers. In some cases, army combat teams can be part of an LCG as well. An LCG would include surface, subsurface, and airborne platforms optimally suited for operations in littoral waters, ideally (though the U.S. Navy currently lacks several of these) FFLs, multipurpose corvettes, FACs, SSKs fitted with AIP, shipborne/land-based multipurpose helicopters, surface mine-countermeasures ships, unmanned vehicles (UAVs / unmanned surface vehicles [USVs] / unmanned underwater vehicles [UUVs]), and special operations force (SOF) teams. Each LCG should be tailored for a particular mission, such as for obtaining/maintaining sea control, denying sea control, or attacking the enemy's or defending friendly shipping. This means that the composition of LCGs should be tailored depending on the mission and the situation.

For a small or medium country, all services of the armed forces deployed in the littorals should be subordinate to a single command commander. Directly subordinate to such a commander should be several maritime or naval district commands, each of them consisting of several maritime or naval combat sectors (zones). At the tactical level, forces for littoral combat might consist of a number of AIP SSKs, multipurpose corvettes, diverse FACs, small amphibious ships and craft, mine-countermeasures ships and craft, land-based helicopters, UAVs/UUVs/USVs, coastal missile/gun batteries, special forces teams, and remotely controlled minefields. These forces should be organized in combat groups depending on a particular mission. They should be supported by land-based fighter, attack, and reconnaissance aircraft and larger army units. The emphasis of smaller and medium navies would be primarily on sea denial.

In World War II, the British and the Germans established command organizations for their respective coastal forces struggling for control of the North Sea and the English Channel. The Royal Navy established main bases for its coastal forces in East Anglia, at Great Yarmouth, Lowestoft, and Felixstowe. They were responsible for administration and maintenance of light forces operating from them. However, operationally these forces were controlled by CINC, the Nore, at Chatham. In February 1943, an intermediate level of command was created with the establishment of Coastal Forces (Nore), under a navy captain. The main responsibility of this new command was to unify training of all coastal forces according to a common doctrine.[74]

The German organization was in some ways similar to the one established by the British. After reorganization in February 1941, Commander of Security, West (Befehlshaber der Sicherung West), with headquarters in Paris, was responsible for defense of the French Channel and Atlantic coasts. He was directly subordinate to Naval Group Command West (Marinegruppenkommando West) (after September 1942 also Commanding Admiral, France), in Paris. Commander,

Naval Group Command West was subordinate not to the CINC of the western theater but directly to the High Command of the Navy in Berlin. He had under him three security divisions: the 2nd (responsible for the zone from the Scheldt estuary to Cherbourg), the 3rd (Cherbourg to Saint-Nazaire), and the 4th (Saint-Nazaire to the Spanish border). In November 1942, the 6th Security Division was established and was responsible for defense of southern France's coast. Each security division consisted of flotillas of picketboats, submarine chasers, minelayers, and minesweepers. The principal mission of Commander of Security, West was defense and protection of cargo vessels carrying important raw materials (e.g., iron ore from Spain).[75]

The S-boats, which played a principal role, were subordinate to Naval Group Command West, but via Commander of Scouting Forces (Befehlshaber der Aufklaerungsstreitkraefte) and the Leader, Torpedo Boats (Fuehrer der Torpedoboote). This rather rigid command structure soon proved inadequate; in the spring of 1942, Leader of Torpedo Boats was renamed Leader, S-Boats (Fuehrer der Schnellboote). This new organization provided more flexibility in command and control of the S-boats. The Germans established their S-boat bases in Rotterdam, Ostend, Boulogne, and Cherbourg. In addition, the bunkers at Le Havre for R-boats (*Raümboote,* minesweepers), were used by S-boats, as were the smaller ports of Vlissingen (the Netherlands), Saint-Malo (Brittany), and Saint Peter Port (Guernsey).[76]

Today, smaller navies operating in the littorals are organized in either naval districts or naval flotillas. For example, the Iranian naval forces in the Persian Gulf are subordinate to three naval districts: the 1st Naval District, at Bandar Abbas, for the Strait of Hormuz; the 2nd Naval District, at Bushehr, for the central Persian Gulf; and the 3rd Naval District, at Mahshahr, for the northern Persian Gulf. Each naval district includes several naval bases; the independent naval base at Chabahar is responsible for operations in the Gulf of Oman.[77] In contrast, the Royal Swedish Navy's seagoing forces are organized into three flotillas: the 1st Submarine Flotilla, at Karlskrona (submarines, a submarine rescue unit, a marine transport unit); the 3rd Naval Flotilla, at Karlskrona (33 Mine Clearance Division, 34 Maintenance Division); and the 4th Naval Flotilla, at Berga (41 Corvette Division, 42 Mine Clearance Division, 43 Maintenance Division, 44 Navy Diver Division). In addition, there is an amphibious regiment and a naval base, both at Karlskrona.

Littoral warfare is inherently joint (multiservice) and often combined (multinational). In the modern era, no single combat arm or service can reach its full potential unless it is employed in combination with other combat arms, branches, and services. Among other things, shortcomings in the capabilities of one service can be balanced by the complementary capabilities of others. A JFC has more

options than a single-service component commander in employing his forces, because sea, land, air, and special-operations elements offer a wider range of possibilities. At the same time, the enemy is put at a great disadvantage against a multidimensional threat for which he might not have an effective counter. Multiservice forces allow a creative operational commander to combine their diverse but complementary capabilities in asymmetrical as well as symmetrical ways and generate greater impact than the sum of the individual parts.[78] For example, missile-armed surface combatants can attack a variety of targets on the enemy coast, while land-based aircraft can strike enemy warships and merchant ships at sea or in their bases and ports. Friendly ground forces can seize enemy naval bases, ports, and airfields and thereby greatly facilitate the task of obtaining sea control.

Joint employment of two or more services also has some disadvantages. One is that command organization / C2 is more complex than in the employment of single-service forces. The different service cultures and doctrines might lead to misunderstanding and make cooperation difficult. Other potential challenges include parochialism of services, personal incompatibility (or even animosity) among high commanders, poor operations security, and insufficient interoperability. Communications arrangements are more cumbersome because of differing systems and procedures used by various services. (This is an especially difficult problem to resolve in employing multinational forces.) Deployment of combat forces and logistical support and sustainment also pose much greater challenges than for single-service forces. Information flow within a multiservice or multinational force is also generally much slower than in a single-service force.

Perhaps the most critical prerequisite for success in littorals is air superiority over the major part of the theater. The struggle for the control of the air in the littorals cannot be separated from that in the airspace over adjacent coastal areas. Because of the short distances, the effectiveness of aircraft against ships and targets on the coast is much higher in a typical narrow sea than on the open ocean. Aircraft represent a constant threat to the survivability of all vessels, but especially to surface ships. The ever-present threat from land-based aircraft can even preclude the employment of large surface combatants in a narrow sea. Their survivability and that of merchant vessels while operating within the effective range of enemy land-based aircraft can be ensured only by reliable and effective air cover. The effectiveness of land-based aircraft against surface ships was demonstrated for the first time in European waters in World War II. The Luftwaffe was instrumental for the successful German invasion of Norway in April–June 1940. The Royal Navy's failure to deny the use of the sea to the Germans in the first days of the campaign was a result of the intensity and effectiveness of the Luftwaffe attacks when protection was not provided by Allied fighters based ashore.[79]

The Luftwaffe's effectiveness in attacking the surface combatants was on full display during the final phase of the struggle for Crete in late May 1941. The Royal Navy was extensively committed to evacuating troops to Alexandria, Egypt. During this effort Allied ships were subjected to massive attacks from the Luftwaffe's VIII Air Corps. One effect of these attacks was to force the Allies to abandon attempts to evacuate troops from Crete's northern coast.[80] Luftwaffe bombers and dive-bombers sank three Allied cruisers, six destroyers, five motor torpedo boats, and several smaller ships.[81] In addition, two battleships, one aircraft carrier, six cruisers, and seven destroyers were damaged. Some thirty-two Allied transports, supply ships, and fleet auxiliaries with about 128,500 tons were sunk or had to be abandoned, and twelve ships with 94,500 tons were lost at sea.[82] Admiral Cunningham pointed out that in three days he had lost two cruisers and four destroyers, as well as a battleship, two more cruisers, and four destroyers severely damaged.[83] The struggle for Crete shows that in the modern era sea control cannot be obtained without the control of the air. The answer to enemy airpower can only be superior airpower.[84]

Success in littoral warfare is hardly possible without sound theory. The theory of littoral warfare should be a separately developed but at the same time an integral part of the theory of naval warfare as a whole. One of the main purposes of naval theory is to provide a broad and deep framework for understanding the entire spectrum of warfare at sea. However, a major problem is the lack of a coherent theory of littoral warfare. Classical naval thinkers—notably Rear Admiral Alfred T. Mahan (1840–1914), Vice Admiral Philip H. Colomb (1831–99), Sir Julian S. Corbett (1854–1922), Vice Admiral Wolfgang Wegener (1875–1956), and Vice Admiral Raoul Castex (1878–1968)—generally drew no distinction between warfare conducted on the open ocean and in the littorals. Yet all of them discussed from a historical perspective many naval encounters that occurred in the littorals. Mahan, in his *Naval Strategy: Compared and Contrasted with the Principles and Practice of Military Operations on Land* (1911), explained in some detail many aspects of what would be considered today operational-level warfare in the littorals. Colomb, in *Naval Warfare: Its Ruling Principles and Practice Historically Treated* (1891), provided numerous historical examples of war in the littorals in his analysis of what he called "the struggle for the command of the sea" and "attacks on the territory from the sea."[85] Corbett, in *Some Principles of Maritime Strategy,* made many references to the role of naval forces during the Anglo-Dutch Wars (1652–54, 1665–67, and 1672–74) in the English Channel and North Sea, the British blockade of the French fleet in Atlantic ports and the Mediterranean during the Napoleonic Wars, the Royal Navy's support of the army of General Arthur Wellesley (later Field Marshal, First Duke of Wellington) (1769–1852) during the Peninsular War (1808–14), and the naval actions in the

Yellow Sea during the Russo-Japanese War (1904–1905). Wegener's main focus, in his *Naval Strategy of the World War* (1929), was on explaining the Imperial German Navy's failure to obtain freedom of action outside the confines of the North Sea; he explained in some detail the strategic situation in the North Sea during World War I.[86] Castex wrote the five-volume *Strategic Theories* (1929–35), where he paid a great deal of attention to historical analysis of warfare in the littorals. Among other things, Castex analyzed the German operations in the North Sea and the influence of geography in naval warfare.[87] Colonel Charles E. Callwell of the British Army, though not widely known, was perhaps one of the first influential proponents of joint warfare in the littorals. In his classic work *Military Operations and Maritime Preponderance* he described and analyzed in great detail naval bases and fortresses and their capture by fleet forces, land operations against enemy fleets and merchant shipping, and the benefits of having "maritime command" against an enemy stronger on land. He also compared maritime and land lines of operations. Callwell explored influence of "maritime command" on military lines of operation in the coastal area. A major part of his work was focused on amphibious landings and siege of "maritime fortresses." He also devoted a long chapter to the influence of inland waters and waterways on military operations.[88]

Optimally, foundations of a theory of littoral warfare should be historical experience and the vision of the future war at sea. The latter is based primarily on the influence of the current and anticipated new technologies on the character of war at sea. Overemphasis on either historical experiences or technology would invariably result in an unsound naval theory. It is an especially grave error to develop naval theory and then doctrine based on exaggerated belief in the value of new technologies. Also, a naval theory should not be developed on the basis of fiscal difficulties of the moment or political ideology. In all these cases, the result will be a naval theory disconnected from the operational realities. Examples of naval theories that made both kinds of errors are the "Young Schools" of France (the *Jeune École*) of the mid-1870s to the early 1900s and of the Soviet Union, in the late 1920s and mid-1930s.

The French Young School was based almost entirely on an exaggerated view of the benefits of the new technologies and on mislearned lessons from the Austro-Italian War of 1866, reinforced by France's dismal economic situation in the aftermath of the war with Prussia in 1870–71.[89] Its leading proponent, Vice Admiral Hyacinthe Laurent Théophile Aube (1826–90), contended that command of the sea, obtained through a naval battle or blockade, had become highly problematic because of the new technological advances. Aube's ideas were widely accepted by young French naval officers, who believed that they had found a new naval warfare concept for attack on and defense of the coast—a network of "sleeping"

torpedoes and coastal fortifications, combined with ram ships, floating batteries, and high-speed, seventy-ton, twenty-knot gunboats, and torpedo boats, as well as fifty-ton "defensive" boats supported by armored ships.[90] These views also found a receptive audience in Austria-Hungary, for reasons that were political, military, and fiscal.

The Soviet "Young School," which emerged in the 1920s (in opposition to an "Old School" of Mahanian former tsarist officers), was based on the poor state of the Soviet Union's economy and fleet, its Marxist-Leninist ideology, and principles of partisan (guerrilla) warfare. Its proponents advocated a navy composed of light surface combatants, submarines, mines, and land-based naval aircraft; they also advocated employing submarines jointly with air forces against large surface ships.[91]

Despite the shared name, however, the Soviet Young School's ideas were not identical to those of the French Young School of the 1880s; arguably the Soviet strategy was defensive, not offensive, as the French strategy was.[92] Both, however, produced theories potentially applicable to littoral warfare—but only, as it were, accidentally, on the basis of unrelated and transient national factors, not a true understanding of naval warfare. Neither school produced forces or concepts viable for naval operations in the littorals, though both were preeminent for a number of years in their respective countries (and, for the *Jeune École,* in Austria-Hungary as well). Both were abandoned when national situations changed.[93]

A sound doctrine, regardless of its scale, should revolve around several "operating concepts." An operating concept can be tactical or operational; in a naval context, a "tactical concept" describes in broad terms the employment of single-type platforms or groups. An "operational concept" aims at operational-level objectives through major naval or joint operations. An operational concept specifically for littoral combat should be based on a proper assessment of the operating area and a realistic vision of future warfare in it. It should describe in broad and simple terms how forces should be employed. It should not directly or implicitly refer to a specific operating area or the potential enemy.

An operational concept should be flexible to allow creative ways to employ one's forces in case of sudden changes in the situation. It should ensure speed of action and surprise. It should pose a threat from multiple physical mediums (sea, air, and land) and thereby considerably limit the enemy's options. It should also provide for operational deception and surprise. It should integrate both offensive and defensive information operations (IO) capabilities. Finally, an operational concept should be articulated clearly and succinctly.

In U.S. practice, an operational concept encompasses a number of "functional concepts" to ensure its effective application in combat. The principal types of functional concepts are notional force composition, command organization,

command and control, maneuver, fires, sequencing and synchronization of combat forces, logistical support and sustainment, and force protection. Each functional concept in turn comprises a number of "enabling concepts," describing tactics and procedures.[94]

A sound doctrine for littoral warfare should encompass several different operational concepts. For the stronger side the key operational concept should be sea control, while for the weaker side the focus should be sea denial. However, prudence also dictates that a stronger side should develop an operational concept for sea denial as well. Doctrine for littoral warfare at the operational level of war should include operational concepts for amphibious landings, antiamphibious defense, attack on enemy trade, and defense and protection of friendly maritime trade. Littoral warfare doctrine should also include tenets of operational command organization, C2, and leadership; operational decision making and planning; and operational (supporting) functions (intelligence, IO, fires, logistics, and protection). Doctrine for littoral warfare cannot be written as a stand-alone document; it should be developed as an integral part of a navy's doctrine for the operational level of war. Warfare on the open ocean and warfare in littorals are inseparable parts of warfare at sea as a whole.

OBJECTIVES

In general, the principal objectives of naval warfare are sea control, sea denial, choke-point control or denial, basing/deployment-area control (or denial), and destruction or weakening of the enemy's military-economic potential at sea, and preservation of one's own. Although there are many similarities among the main methods used on the open ocean and in the littorals for accomplishing these objectives, there are also considerable differences. Normally, the principal objective of a stronger side at the very beginning of hostilities would be to obtain and then maintain sea control—the ability to use a given part of the sea or ocean and associated airspace for military and nonmilitary purposes and deny the same to the enemy during open hostilities.

Sea control exists in various degrees and states (spatial extents). These variations are the product of a complex interplay among the factors of space, time, and force. Generally, the degree of sea control depends on the size of the ocean/sea area; distances to the operating area from one's basing/deployment area; and relative numerical/qualitative naval strength (plus in some cases nonnaval forces) compared with the enemy forces.

Control of the surface is relatively easier to obtain in a narrow sea with a few or no offshore islands. Narrow seas with large numbers of offshore islands or archipelagoes pose the greater challenges because of the numerous hiding places, especially for small surface combatants. The presence of advanced SSKs

and sophisticated mines would make it extremely difficult to obtain the desired degree of control of the subsurface in the littorals. Control of the air is perhaps even more elusive, especially in the littorals, with a multitude of offshore islands or archipelagoes.

The spatial extent of sea control can be general or local or a combination of these two. General control means a loose control, mainly sea surface, of a larger part of a given maritime theater. Local sea control is intended to obtain and maintain a high degree of control in all physical dimensions but in a smaller part of the theater where an operational objective is located. It depends on the general situation in a given maritime theater.[95] Sometimes a stronger side possesses a general control of a maritime theater but local control is in the hands of a weaker opponent. For example, in the aftermath of the landing at Leyte on 20 October 1944, the Allies controlled Leyte Gulf and the approaches to the Philippine Archipelago generally. However, they did not control the western approaches to Leyte Island, especially during the night hours and in bad weather. This situation, in turn, allowed the Japanese to bring in fresh troops and matériel to Leyte from nearby islands in the Visayas and near Mindanao;[96] they used mostly barges but also transports, submarine chasers, and destroyers, until 9 December. The main reason for the Allied failure in the western approaches to Leyte was a lack of ships larger than PT boats but smaller than destroyers and capable of operating in confined waters, and also of sufficient aircraft fitted with radar for operating at night.[97]

Sea control on the open ocean cannot be isolated from control in the littorals. At the same time, the influence of land is far more pronounced in a typical narrow sea than it is on the open ocean. There is no real sea control unless a stronger side controls both the sea and adjacent land area.[98] In a narrow sea, control of the high seas does not necessarily mean control of waters within the groups of islands or archipelagoes. Success in the struggle for sea control requires the closest cooperation among all services.[99]

On the open ocean, sea control is obtained primarily by destroying or at least neutralizing a major part of the enemy's forces at sea or their basing areas. In contrast, in a typical narrow sea, a side weaker at sea but having stronger ground forces and air superiority could obtain sea control largely by capturing the sea's exit(s), the enemy's main naval bases and airfields, and key islands. For example, and despite the inferiority of the Kriegsmarine, the German army, with the support of the Luftwaffe, essentially obtained sea control over the eastern part of the Baltic and the Gulf of Finland in the initial phase of the invasion of the Soviet Union on 22 June 1941. Army Group North advanced quickly along the Baltic coast in the first few weeks and by September 1941 had seized the entire coast (except the eastern part of the Gulf of Finland), including the large Soviet naval

bases at Leningrad and Kronshtadt. Hence the Germans and the Finns could operate in the Bay of Kronshtadt to destroy the remainder of the Soviet Baltic Fleet.[100]

In June 1941, the Germans relied on their army's rapid advance along the coast of the Black Sea coast to obtain control of that sea. Army Group South advanced through southern Ukraine to seize the Crimean Peninsula, with its large naval base at Sevastopol, and other, Ukrainian ports. Despite bitter Soviet resistance, by October the Germans occupied most of the Crimea, including the Kerch Peninsula. Yet the Sevastopol fortress did not fall into German hands until early July 1942. The German offensive in southern Russia in that summer led to the capture of almost all the remaining Soviet naval bases and ports in the Black Sea. However, Tuapse, Poti, and other smaller bases along the southern Caucasian coast of the Black Sea were never captured by the Germans; having failed to eliminate the Soviet naval forces completely, the Germans never obtained full control of the Black Sea. Soviet naval forces remained a constant nuisance for German supply traffic on the Black Sea.[101]

For the weaker side in the littorals, the principal objective would be to deny control of the sea to the opponent—that is, frustrate partially or completely the enemy's use of the sea for military and commercial purposes. Alternatively, a state of disputed or contested sea control might exist, in which the opposing sides possess roughly equal strength, there is no significant change in the ratio of forces, and the initiative does not shift to either side.[102] Such a situation is characterized by an almost continuous struggle for control, which when achieved is usually maintained for only a short time and then lost and then obtained again. Disputed sea control is characterized by large losses on both sides.

A stronger side can have a high degree of control on the open ocean but much less closer to the continental landmass. Complete control of a narrow sea cannot be obtained as long as the opponent, however weak, exists and is active. For example, during World War I, the British Grand Fleet never had control of the eastern and southeastern part of the North Sea. Likewise, control of the Adriatic was essentially in the hands of the Austro-Hungarian navy throughout the entire war.[103]

In the past, weaker navies achieved results by attacking enemy coasts or maritime trade while avoiding fleet-on-fleet encounters. For example, in World War I, the German navy harassed the British and conducted minor actions to reduce the British margin of superiority to such an extent that eventually the High Seas Fleet (Hochseeflotte) took the offensive.[104] The Germans also hoped that successful attacks on the Entente's trade routes might force the British to divert some of their naval strength and thereby make the Grand Fleet more vulnerable to ambushes by light surface forces. Containment of the High Seas Fleet required the

presence of British ships that otherwise could have been doing something else. Also, decisive actions against U-boats, such as laying an effective mine barrier off the German coast, could not be undertaken during the entire war, because of the presence of the German battle fleet in the area.[105]

The struggle for control of straits/narrows or "choke points" is a unique feature of the control of enclosed or semienclosed seas. To control a narrow sea a blue-water navy must first control the sea's exits. This could be limited to control of the airspace above it, but obviously full control of the exit in all three physical dimensions (surface, subsurface, air) is far preferable. For a blue-water navy, general control of the open ocean is hardly possible without establishing not only general control of waters adjacent to a narrow sea but also control of its exits/ entrances. Conversely, for a riparian state it is absolutely critical to have free access to open waters beyond the confines of the narrow sea on which it lies. Choke-point control, then, is an offensive objective for a stronger side, and denying that control—an easier task—is a defensive objective for the weaker. Not only naval forces but other services as well would be employed, either way.

A great advantage for a weaker opponent in such a case is that its forces would operate along multiple and much shorter lines of operation and retreat. The blue-water opponent can use only a single line of operation and a single line of retreat. Another advantage of the weaker force is that sometimes it may be able to seize and maintain sea control of a strait and its approaches with nonnaval forces alone.

Experience shows that control of a sea's only exit is usually insufficient to deny the weaker fleet freedom of action within a given narrow sea; full or partial control of operationally significant positions must be obtained as well. For example, in World War I, the French fleet blockaded the Strait of Otranto early in the war but made only occasional forays farther north into the southern Adriatic. This left the much weaker Austro-Hungarian fleet almost undisputed control of the Adriatic throughout the war. Had the Entente navies made a strong effort to destroy the Austro-Hungarian fleet, they could have prevented the German and Austro-Hungarian U-boats from carrying out their deadly attacks on Entente shipping in the Mediterranean.[106]

In another example, during World War II the Allies had strategic control of the Mediterranean because they controlled the Strait of Gibraltar and the Suez Canal. (Turkey being formally neutral, neither the Allies nor the Axis controlled the Turkish Straits.) Within the Mediterranean, the Allies controlled in 1940–43 only a single operationally significant position, the island of Malta; the Bonifacio Strait, the Strait of Messina, and the Strait of Otranto were in the hands of the Axis, while control of the Sicilian Narrows was disputed.

Choke-point control can also cut off an enemy's links overseas. Conversely, blocking a choke point from within the enclosed sea to prevent any outside force from entering is a form of self-blockade, usable only if no further offensive actions are planned.[107]

Another objective of naval warfare in the littorals is to ensure the security of basing and deployment areas; otherwise it would be difficult, if not impossible, to obtain, maintain, or deny sea control. At the beginning of hostilities the stronger side would try to expand its own basing and deployment areas and prevent the weaker side from doing the same. Basing/deployment-area control is one of the primary responsibilities of the operational commander. It is an integral part of theater-wide or operational protection. Not only naval forces but those of other services would be employed.

Basing/deployment-area control is an operational objective accomplished by a series of tactical actions and protection measures conducted during the entire war at sea. The principal defensive tactical actions include reconnaissance and surveillance; patrolling of the approaches of one's naval bases, ports, and selected parts of the coast; air, antisubmarine, and anti-combat-craft defense; defensive mining and mine countermeasures; and defense against commando raids and combat swimmers. Offensive tactical actions include destruction of enemy surface combatants potentially threatening one's naval bases/ports, attacks on the enemy's naval/air bases and ports and installations/facilities on the coast, and laying of mines in the enemy's coastal waters. Protection of basing and deployment areas is significantly enhanced by a variety of passive and active measures, such as the countering of enemy reconnaissance or surveillance, electronic warfare, and cover and concealment. Additionally, a number of protective measures can improve the survivability of forces, coastal installations, and facilities. Once obtained, basing/deployment control must be maintained, and everything possible done to deny the same to the opponent.

"Trade warfare" or "economic warfare"—attack on the enemy's maritime trade and defense and protection of friendly shipping—is an integral part of a much broader task of weakening or destroying the enemy's military-economic potential and protecting one's own. In the littorals, the priority is shipping at sea / in ports, ports, shipyards and ship-repair facilities, installations critical for supply and sustainment of forces on the land front, the needs of war industry, and the population.[108] This task is much more difficult for a weaker side because of its inability to ensure an adequate degree of sea control. But it can still protect sea routes close to its coast and within island chains, if it establishes multilayered defenses. In general, maritime traffic is much easier to defend if friendly troops control the coastal area, including naval bases, ports, and airfields.

METHODS

The principal methods of combat employment of naval forces generally are tactical actions, major naval operations, and maritime campaigns. Naval warfare in the littorals would be characterized by numerous and diverse tactical actions fought on the surface, beneath the surface, and in the air. Minor tactical objectives would be primarily accomplished by attacks and strikes, while major tactical objectives would normally require naval raids, engagements, or battles. Naval tactical actions are normally an integral part of major naval/joint operations but they could be, as the example of the Solomons campaign of 1942–44 illustrates, also conducted independently. Yet they should be invariably part of a given operational framework—that is, contributing directly or indirectly to the accomplishment of a given operational or strategic objective. For example, between 9 August 1942 and 25 November 1943 fifteen major surface actions were fought in the waters around the islands of Guadalcanal, New Georgia, and Bougainville. All of them were a part of the struggle for sea control in the Solomons Archipelago and its approaches. All but three of these actions were fought at night. The Japanese (who were much better than the Allies in night fighting and the use of gunnery and torpedoes in combination) won or achieved draws in ten of them. No fewer than seven naval battles and engagements were fought for Guadalcanal alone. The Japanese losses (including the fighting off New Guinea and the Bismarck Archipelago) amounted to two battleships, one small aircraft carrier, three heavy and three light cruisers, and thirty-six destroyers. In addition, Japanese naval air strength was so severely depleted that the air wings of fast aircraft carriers could thereafter no longer be properly manned. An even more serious problem for the Japanese was that new construction was unable to make up for the losses. No more battleships or heavy cruisers were built by the Japanese, and only half of the lost destroyers were ever replaced.[109]

During the Yom Kippur / Ramadan War of October 1973 the Israelis fought two naval battles, one each with the Egyptians and the Syrians. In the night of 6/7 October, a force of five Israeli missile boats patrolled off Syria's coast, some two hundred miles from their home base. The Israeli boats identified and then sank with gunfire one Syrian torpedo boat at about 2230. The same force then swept the Syrian coast off the port of Latakia and sank one Syrian minesweeper with gunfire, before detecting three Syrian missile boats and one minesweeper at about 2335. In the subsequent missile exchange, all three Syrian missile boats were sunk within twenty-five minutes.[110] In the night of 8/9 October, six Israeli missile boats approached the Egyptian coast to shell the military installations and coastal defenses in the area of Damietta. Around midnight, four Egyptian missile boats engaged them. Three of the Israeli missile boats launched their missiles,

and within forty minutes three Egyptian boats were sunk; the fourth was out of range and escaped to safety.[111]

The principal method of combat employment to accomplish a single operational objective in littorals is a major naval operation—a series of major and minor naval tactical actions fought on the surface, under the surface, and in the air. A major naval operation in the littoral should be planned and conducted by a single commander and in accordance with a common operational idea (scheme). Many major naval operations were conducted during World War II in the littorals. The best-known examples are the battle of Matapan on 27–29 March 1941; escape of the German battle cruisers from Brest through the English Channel, 11–13 February 1942 (Operation CERBERUS); convoys to Malta on 12–15 June 1942 (Operation HARPOON/VIGOROUS) and on 10–15 August 1942 (PEDESTAL); and amphibious landings on Sicily on 10 July 1943 (HUSKY), and at Salerno on 9 September 1943 (AVALANCHE). The most recent example of a major naval/joint operation in the littorals was the British recapture of the Falklands/Malvinas on 2 April–14 June 1982 (Operation CORPORATE).

Because of the overlap of the physical mediums in which services operate, major operations in the littorals conducted predominantly by a single service would be very rare. All major amphibious landing operations are inherently joint/combined (multinational), regardless of the physical environment; also, attacks on major naval bases and ports, support of the coastal flank of friendly troops, and attacks on and defense of maritime trade in narrow seas require the closest cooperation among the services. Naval forces will have the principal roles, nevertheless, in major operations designed to destroy or neutralize enemy fleets at sea or their bases. The weaker side will have few if any opportunities to plan and execute major naval/joint operations to deny sea control, but it would often conduct major operations in antiamphibious defense and the defense of major naval bases and ports. It might also plan major operations in defense of shipping.

Major naval/joint operations should be planned, prepared, and conducted by a naval/maritime component commander. In U.S. terms, joint/combined maritime force component commanders designated at theater-level commands have sufficient forces for obtaining and maintaining sea control in the littorals. That responsibility should not be shared by the air component commander; sea control means control of not only the surface and subsurface but the air as well. Divided command not only would invariably complicate the accomplishment of objectives in major naval/joint operations but also might prove quite detrimental. The planning, preparation, and execution of naval/joint operations in the littorals are highly dependent on uninterrupted, fast, and secure communications to participating forces. Speed of communications is perhaps one of the most critical factors for success in combat in the littorals.

A weaker side at sea can use unconventional and asymmetric tactical methods to inflict losses on its stronger opponent. One relatively new method involves so-called swarming attacks, in which a large number of small, fast boats, hidden in coves on the coast or among islands, would launch massive missile strikes against large surface combatants or commercial vessels. Success would primarily depend on synchronization of the delivery of almost simultaneous attacks by many small boats from different directions, to overwhelm missile defenses. For example, the Iranians reportedly intend to use swarming attacks against the U.S./coalition naval forces operating in the Persian (Arabian) Gulf, and especially when transiting the Strait of Hormuz. Swarming attacks would be conducted at short ranges, perhaps not greater than 6,500 feet.[112] Another swarming tactic that could possibly be effective against large surface combatants would use UAVs, either independently or in combination with massive attacks by small, fast, missile-armed craft. The danger that swarming attacks might pose to major surface combatants, especially in confined waters like the Strait of Hormuz, should not be underestimated by a blue-water navy, including the U.S. Navy.

COMMAND AND CONTROL

C2 of naval forces operating in the littoral waters is generally more challenging than in warfare on the open ocean. Because the small size of the operating area and high intensity of combat would cause sudden and often drastic changes in the situation, the main prerequisites for success would be the largest possible degree of local initiative. This means that true German-style "mission command" should be applied. The commander's intent should afford sufficient freedom of action by subordinates at all levels of command. Unnecessary interference with the responsibilities of subordinate commanders cannot but negatively affect the morale and combat motivation, resulting in passivity and unwillingness to take the initiative. Short warning and reaction times and rapid changes in the situation require full exercise of the initiative at all levels and high tactical skill.[113] However, mission command is not absolute—the higher commander is duty bound to intervene, either reversing decisions or replacing subordinate commanders, when subordinates' actions endanger the success of the mission or jeopardize the missions of neighboring commanders.

Mission command requires highly educated and well trained subordinates; otherwise directive orders must be used. The higher commanders and their subordinates must share in mission accomplishment. This implies complete trust in each other's professional and personal qualities. In littoral warfare, personal relationships between commanders and their subordinates are especially critical, given the small crews involved and immediate personal danger. Hence, great attention must be given to unit cohesion on board individual ships and forces.

Networking of surface ships, aircraft, and submarines is potentially beneficial in the open waters off a continental landmass, such as off the coast of Africa or in the Indian Ocean. Yet the weaker side at sea could obtain even greater benefits by knitting together its seagoing and shore-based forces and thereby obtaining a real- or near-real-time picture of the situation in the initial phases. It can also effectively integrate employment of all naval and other forces in denying access to its littorals.

In a war between two strong opponents, tactical commanders would have much less time than in open waters to estimate situations and make sound decisions. Advanced information technologies allow commanders to share information obtained from the common operational picture (COP) and cooperative engagement capability (CEC). A COP provides to all commanders an integrated, graphical depiction of the battle space based on a single, shareable set of data. It presents the current locations, statuses, and often planned movements of friendly, neutral, and enemy ground, maritime, and air forces. It can also display other information, such as the weather and battle-damage assessments.[114] Depending on the level of command, it is possible to choose what information to display. A potential problem is that commanders looking at the same data might interpret them differently and therefore form different pictures of the situation.[115]

A COP is developed by correlating and fusing data from multiple, dissimilar data sources, such as tactical data links, reconnaissance/surveillance, and sensor networks. Currently, tactical data links provide the bulk of the data that constitute the COP. These data inputs are often huge, originating from overlapping sensor systems and passing through links that are unable to segregate redundant and erroneous data before they are all fused into a COP.[116] To eliminate false and redundant data across subnetworks and prevent them from entering the COP requires extensive cross-checking and filtering. This would require effort and time that might not be available when operating in the littorals.[117]

At the tactical level, a common tactical picture (CTP) is created. Various CTPs are correlated and fused to create a new database that is then used to build the COP. However, data used to build a COP or CTP mean little without a context —that is, personal understanding of how data were developed and what their sources were. Not all available data are allowed onto the CTP, and not all data from various CTPs are allowed into the COP.[118]

One of the potentially greatest problems here for littoral combat is that operational commanders might interfere in the responsibilities of tactical commanders. It is a dangerous illusion to believe that a COP provides sufficient fidelity to allow operational commanders to make tactical decisions. They and their staffs are too far away to understand the situation better than the tactical commander on the scene of action. Moreover, even if operational commanders had precise

information, they would not know the context in which information had been collected and processed. Hence, operational commanders inserting themselves into a situation would find themselves reacting to events instead of exercising proper control.[119]

CEC fuses high-quality tracking data from participating sensors and distributes the result to all other participants in a filtered and combined state using algorithms to create a single, common, air-defense tactical display.[120] The advent of CEC resulted in great improvement in the accuracy of air-contact tracking, continuity of tracks, and identification consistency.[121] CEC provides a superior air picture, based on all sensor data available, that allows considerably earlier detection and more consistent tracking of air contacts than previously possible. CEC was designed especially against the air threat in littoral waters.[122] It extracts data from sensors aboard surface ships and aircraft in a group and displays fire-control-quality data in a matter of microseconds to all so that they can engage incoming targets at maximum intercept ranges.[123] Cues based on composite tracks allow downrange ships to detect targets earlier and maintain track longer. They also allow the maximum battle space in which to engage theater ballistic missiles.[124]

Yet the networking of platforms, weapons, and sensors has a number of technical and human limitations that could adversely affect commanders and staffs in high-intensity combat in the littorals. All too often, collecting information becomes an end in itself. Too much information might be collected by higher headquarters, producing backlogs that cannot be processed or transmitted in a timely fashion to subordinate tactical commanders. At the tactical level, veritable floods of information overload users and may desensitize them.[125] The most extensively networked sensors, decision makers, and shooters can only see what an individual sensor can see. A limitation is the ever-growing communications bandwidth required to transmit the increased amount of data to decision makers and shooters as sensors are added to the network.[126] Another issue is that different decision makers at different levels may need to see different amounts and types of information. For example, air, ground, and naval component commanders would require different tactical pictures. This last is perhaps the single biggest flaw in today's network-centric environment today, and it is especially critical for littoral warfare.

A GROWING THREAT

Warfare in the littorals, particularly in narrow seas, differs in important respects from the war on the open ocean. No maritime theater is more directly affected by the geomorphologic, hydrographic, and oceanographic features of the environment than a narrow sea. Generally, the small size of the theater, short distances,

the presence of a large number of islands, proximity of a landmass, the shallowness of water, and great variability and unpredictability of oceanographic conditions considerably affect the employment of surface ships, submarines, and aircraft. Although all littorals represent challenges in the employment of naval forces and aircraft, the most complex and unpredictable environment is that of the typical narrow sea.

Sea-denial capabilities of the weaker side in the littorals have been significantly increased over the past several decades. A blue-water navy, such as the U.S. Navy, underestimates or, worse, dismisses the growing threat to large surface combatants in the littorals, within global choke points, and in their approaches only at its peril. These threats are bound to increase in scope, range, diversity, and lethality in the years to come.

Among the principal prerequisites for the successful conduct of war in the littorals, perhaps the most critical is a force optimally designed for operations in confined and shallow waters. However, no single-type force, no matter how capable, can ensure success in the littorals. Forces for littoral combat should be organized differently from those for war on the ocean; specialized littoral assets should not be considered either as replacements for blue-water forces or as expendable. The lack of adequate capabilities for littoral warfare could cost a blue-water navy, such as the U.S. Navy, dearly in the case of a high-intensity conventional war. So might lack of a sound theory of littoral warfare, operational concepts, and doctrine; these require much effort and time and cannot be developed in a hurry after hostilities start. Key among the doctrinal tenets for littoral warfare is that command and control should be centralized at the operational level. However, the operational commander should apply the true spirit of the German-style mission command. Subordinate tactical commanders must be given sufficient freedom to act; they in turn must be ready to take high but prudent risks in executing their assigned missions.

NOTES

1. U.S. Navy Dept., *Expeditionary Operations,* MCDP-3 (Washington, D.C.: 16 April 1998), p. 3.

2. Ibid., p. 5.

3. Ibid., p. 21.

4. Richard Mills, "Littoral Combat Ship: The U.S. Needs to Prepare for More Operations along the World's Coastlines," *Foreign Policy,* 1 November 2012, p. 1.

5. Michael Lindberg and Daniel Todd, *Brown-, Green- and Blue-Water Fleets: The Influence of Geography on Naval Warfare, 1861 to the Present* (Westport, Conn.: Praeger, 2002), p. 66.

6. United Nations, *Review of Maritime Transport 2013* (New York: United Nations Conference on Trade and Development, 2014), p. xi.

7. Opher Doron, "The Israelis Know Littoral Warfare," U.S. Naval Institute *Proceedings* (March 2003), p. 67.

8. Michael McDevitt, "The PLA Navy's Antiaccess Role in a Taiwan Contingency," in *The Chinese Navy: Expanding Capabilities, Enduring Roles,* ed. Phillip C. Saunders et al. (Washington, D.C.: National Defense Univ., 2011), p. 206.

9. Mark Gunzinger, with Chris Daugherty, *Outside-In: Operating from Range to Defeat Iran's Anti-access and Area-Denial Threats* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2011), p. 22.

10. Ibid., pp. 26–43.

11. Fariborz Haghshenass, *Iran's Asymmetric Naval Warfare* (Washington, D.C.: Washington Institute for Near East Policy, September 2008), p. 12.

12. David F. Tver, *Ocean and Marine Dictionary* (Centreville, Md.: Cornell Maritime Press, 1979), p. 182.

13. U.S. Defense Dept., *Department of Defense Dictionary of Military and Associated Terms,* JP 1-02 (Washington, D.C.: Joint Staff, 8 November 2010, as amended through 15 March 2013), p. 173.

14. Lindberg and Todd, *Brown-, Green- and Blue-Water Fleets,* p. 66.

15. Enclosed seas, because of their restricted communication with the open ocean, are characteristically tideless or have small tidal ranges; they can be relatively fresh or highly saline. See Charles H. Cotter, *The Physical Geography of the Oceans* (New York: American Elsevier, 1966), p. 71.

16. Ibid., p. 72.

17. The phrase "narrow seas" had its origins in the claims of the English kings to "sovereignty of the sea" around the British Isles in the thirteenth century; they had possessions in France and so directed their admirals to police the "narrow seas"—the Strait of Dover and the English Channel. In 1336, King Edward III reportedly referred to his predecessors as "Lords of the English Sea on every side"; see Wilhelm G. Grewe, *The Epochs of International Law,* trans. Michael Byers (Berlin: De Gruyter, 2000), p. 131. The first written reference to "narrow seas" was apparently in Christopher Marlowe's play *King Edward II,* written in 1590 or 1591. Edward II (reigned 1307–27) says, in the play, "The haughty Dane commands the narrow seas"

(pertaining to the Strait of Dover); discussed in William Shakespeare, *The Plays of William Shakespeare: First Part of King Henry VI* (London: William Heineman, 1904), p. xi note.

18. Haghshenass, *Iran's Asymmetric Naval Warfare,* p. 2.

19. Živan Nikolić and Petar Đjorđjević, "Protivpodmornička borba u uskim morima," *Mornarički Glasnik* (Belgrade), no. 1 (January–February 1971), p. 27.

20. Tomislav Bolfek, "Dejstva na pomorskim komunikacijama u uskom moru (I deo)," *Mornarički Glasnik* (Belgrade), no. 4 (July–August 1974), p. 499.

21. Ibid., p. 500.

22. European Observation Network Territorial Development and Cohesion, *ESaTDOR: European Seas and Territorial Development, Opportunities and Risks* (Brussels: European Spatial Planning Observation Network, 2013), "Annex 4 to the Scientific Report: Baltic Sea Regional Profile, Applied Research 2013/1/5, version 16/1/2013," p. 10.

23. European Observation Network Territorial Development and Cohesion, *ESaTDOR: European Seas and Territorial Development, Opportunities and Risks* (Brussels: European Spatial Planning Observation Network, 2013), "Annex 6 to the Scientific Report: Mediterranean Sea Regional Profile, Applied Research 2013/1/5, version 16/1/2013)," p. 26.

24. This term is also used in reference to a geographical feature on land such as a defile, valley, or bridge; in generic terms it refers to a point of obstruction, congestion, bottleneck, or hazard.

25. Cited in B. Fabiani, *Die seestrategische Bedeutung von Inseln und Meerengen unter Berucksichtigung der gegenwaertigen militaerstrategischen Bedingungen und der Entwicklung des Seevoelkerrechte* (Hamburg, Fed. Rep. of Ger.: Fuehrungsakademie der Bundeswehr, 31 October 1980), p. 22.

26. "World Oil Transit Chokepoints," *U.S. Energy Information Administration (EIA),* updated 22 August 2012, p. 3, www.eia.gov/.

27. Ibid., p. 5.

28. Felipe Umaña, *Transnational Security Threats in the Straits of Malacca* (Washington, D.C.: Fund for Peace, 2012), p. 3.

29. "World Oil Transit Chokepoints," p. 6.

30. Ibid., p. 10.

31. Ibid., p. 11.

32. Haghshenass, *Iran's Asymmetric Naval Warfare,* p. 2.

33. Mark H. Huber, "Chokepoint Control: Operational Challenges for Blue-Water Navies" (course paper, Naval War College, Newport, R.I., May 2003), pp. 4–5, available at www.dtic.mil/.

34. Thomas Harding, "Chinese Nuclear Submarine Base," *Daily Telegraph,* 1 May 2008, p. 1.

35. Bogislav Pantović and Delimir Kolec, "Značaj razuđenosti obale i naseljenosti otoka u koncepciji opštenarodne odbrane i društvene samozaštite na jadranskom pomorskom vojištu," *Mornarički Glasnik* (Belgrade), no. 5 (September–October 1981), pp. 609–10.

36. Zdenko Simičić, *Pomorsko Ratovanje U Litoralnom Prostoru RH* (Zagreb: Ministarstvo Obrane Republike Hrvatske, Glavni Stožer OS RH, Hrvatsko Vojničko Učilište "Petar Zrinski," Ratna Škola OS RH "Ban Josip Jelačić," August 2002), p. 39.

37. Wu Rigiang, "Survivability of China's Sea-Based Nuclear Forces," *Science & Global Security* 19, nos. 91–120 (2011), p. 100.

38. Leo Lazauskas, *The Hydrodynamic Resistance, Wave Wakes and Bottom Pressure Signatures of a 5,900 Tons Displacement Air Warfare Destroyer* (Adelaide, South Australia: Department of Applied Mathematics, Univ. of Adelaide, 31 July 2007), p. 4.

39. *When Does Shallow Water Become a Problem?,* Hydrocomp Technical Report 124 (Menlo Park, Calif.: Hydrocomp, 2003), p. 1, available at hydrocompinc.com/.

40. Naval Doctrine Command, *Littoral Anti-submarine Warfare Concept* (Norfolk, Va.: 1 May 1998), p. 15, available at www.fas.org/.

41. Norman Friedman, "Littoral Anti-submarine Warfare: Not as Easy as It Sounds," *Jane's International Defence Review,* June 1995, pp. 2–3.

42. Massimo Annati, "Anti-submarine Weapons: The State of the Art," *Military Technology* 32, no. 8 (August 2008), pp. 79–80.

43. Cited in Paul A. Lluy, *Mine Warfare: An Old Threat Presents New Challenges for NATO's Post–Cold War Navies* (Monterey, Calif.: Naval Postgraduate School, December 1995), p. 14.

44. "Sensing in Clutter: Improving Littoral Situational Environment," *Jane's Navy International,* 23 April 2009, pp. 2–3, www.janes.com/.

45. Kyle M. Craigie, *Assessment of Atmospheric Influence on Surveillance Radar Performance in Littoral Zones* (Monterey, Calif.: Naval Postgraduate School, September 1993) [hereafter *Assessment of Atmospheric Influence*], p. 12.

46. "Sensing in Clutter," pp. 5–6.

47. Craigie, *Assessment of Atmospheric Influence,* pp. 14–15.

48. *Surface Ship Tactical Employment in Naval Warfare,* NWP 3-20.6 (formerly NWP 60) (Norfolk, Va.: Naval Doctrine Command, March 1996), p. 4–6.

49. Craigie, *Assessment of Atmospheric Influence,* p. 3.

50. Fr. Luerssen Werft (Shipyard), "Naval Craft, Weapon and Sensor Systems," *Information & Security: An Information Journal* 13 (2004), p. 67.

51. J. Barrie Billingsley, *Radar Land Clutter: Measurements and Empirical Models* (Boston: William Andrew for Lincoln Laboratory, Massachusetts Institute of Technology, 2002), p. 1.

52. "Sensing in Clutter," pp. 4–5.

53. Craigie, *Assessment of Atmospheric Influence,* p. 21.

54. Dragoslav Simonić, "Organizacija i Upotreba Avijacije Na Uskim Morima," *Vojno Delo,* no. 5 (September–October 1951), p. 3.

55. Klaus Liedtke, *Gefechte bei der Sicherung der Kuestengewaesser: Eine Auswertung der Gefechtberichte-See des Befehlshaber der Sicherung "West" von August 1942 bis Juli 1943* (Hamburg, Fed. Rep. of Ger.: Fuehrungsakademie der Bundeswehr, 28 April 1971), p. 4.

56. Ibid.

57. Frank J. Murphy, "Littoral Warfare: Adapting to Brown-Water Operations," CSC 1993, GlobalSecurity.org, pp. 3–4.

58. "Sensing in Clutter," p. 4.

59. Ralph Klingbeil and John Shannon, "Analysis of Network-Enabled ASW Concepts of Operations," in *The Power of Information Age Concepts and Technologies* (San Diego, Calif.: Space and Warfare Systems Center, 2004), p. 7.

60. D. S. Stovel, *New Horizons: Anti-submarine Warfare as Critical Today as It Was during the Cold-War Era,* CSC 28 / CCEM 28 (Toronto: Canadian Forces College, 2002), p. 5.

61. Klingbeil and Shannon, "Analysis of Network-Enabled ASW Concepts of Operations," p. 7.

62. Göran Larsbrink, "Antisubmarine Warfare in Shallow Waters," *Naval Forces* 1 (2000), p. 66.

63. *Multiplying the Effectiveness of Naval ASW: Exploiting Developments in Low Frequency Active Sonar to Improve Operational ASW Capability during Naval Operations* (Dartmouth, N.S.: Ultra Electronics Maritime Systems, 2009), p. 1.

64. Stovel, *New Horizons,* p. 7.

65. Gerhard Gross, "Die Fuehrungsmittel fuer den deutschen Schnellboot-Einsatz im Zweiten Weltkrieg," *Marine Rundschau,* no. 3 (May–June 1962), p. 131.

66. Ante Paić, "Komandovanje na pomorskom vojištu (operativni aspekti)," *Mornarički Glasnik* (Belgrade), no. 3 (May–June 1973), p. 373.

67. Harald Fock, "Seestreitkraefte in Kuesten- und Randmeergebieten (II)," *Wehrkunde,* no. 12 (December 1974), p. 632.

68. Peter Scott, *The Battle of the Narrow Seas: A History of the Light Forces in the Channel and North Sea, 1939–1945* (London: Country Life, 1974), p. 71.

69. Liedtke, *Gefechte bei der Sicherung der Kuesten-gewaesser,* p. 5.

70. Scott, *Battle of the Narrow Seas,* p. 5.

71. Stephen W. Roskill, *The War at Sea 1939–1945,* vol. 1, *The Defensive* (London: Her Majesty's Stationery Office, 1954), p. 443.

72. Doug Thomas, "Warship Concepts: Littoral Combat Ship," *Canadian Naval Review* 2, no. 4 (Winter 2007), p. 37; Matthew Jones, "Aboard the Freedom," *Virginian Pilot,* 16 December 2008; Brien Alkire et al., *Littoral Combat Ships: Relating Performance to Mission Package Inventories, Homeports, and Installation Sites* (Santa Monica, Calif.: RAND, 2007), p. 99, available at www.rand.org/.

73. Phillip Ewing, "Refueling Tops List of LCS Crew Challenges," *Navy Times,* 19 May 2009.

74. Scott, *Battle of the Narrow Seas,* p. 124.

75. Liedtke, *Gefechte bei der Sicherung der Kuesten-gewaesser,* pp. 5–6.

76. Gross, "Die Fuehrungsmittel fuer den deutschen Schnellboot-Einsatz im Zweiten Weltkrieg," p. 130.

77. Haghshenass, *Iran's Asymmetric Naval Warfare,* p. 18.

78. Michael C. Vitale, "Jointness by Design, Not Accident," *Joint Force Quarterly* (Autumn 1995), p. 27.

79. Roskill, *Defensive,* pp. 178–79.

80. Karl Gundelach, *Die deutsche Luftwaffe im Mittelmeer 1940–1945* (Frankfurt a.M., Fed. Rep. of Ger.: Peter D. Lang, 1981), vol. 1, pp. 219–20.

81. Ibid., p. 220.

82. Ibid., p. 446.

83. Roskill, *Defensive,* p. 443.

84. Ibid., pp. 220, 447.

85. Philip H. Colomb, *Naval Warfare: Its Ruling Principles and Practice Historically Treated* (London: W. H. Allen, 1891; repr. Annapolis, Md.: Naval Institute Press, 1990), vol. 1, pp. 48–107; vol. 2, pp. 245–492.

86. Wolfgang Wegener, *The Naval Strategy of the World War,* trans. Holger H. Herwig (Annapolis, Md.: Naval Institute Press, 1989), pp. 35–37, 44–68.

87. Raoul Castex, *Strategic Theories,* trans. and ed. Eugenia C. Kiesling (Annapolis, Md.: Naval Institute Press, 1994), pp. 127–83, 266–89.

88. C. E. Callwell, *Military Operations and Maritime Preponderance; Their Relations and Interdependence* (Edinburgh: William Blackwood and Sons, 1905; repr. Annapolis, Md.: Naval Institute Press, 1996), pp. 65–109, 126–47, 195–262, 309–22, 343–430.

89. Volkmar Bueb, *Die "Junge Schule" der franzoesischen Marine. Strategie und Politik 1875–1900* (Boppard am Rhein, Fed. Rep. of Ger.: Harald Boldt Verlag, 1971), p. 5.

90. François-Emmanuel Brézet, "Lehren der Geschichte und technischer Fortschritt am Beispiel der Entwicklung der Doktrin der Jeune École in Frankreich," in *Seemacht und Seestrategie im 19. und 20. Jahrhundert,* ed. Jörg Duppler (Hamburg, Ger.: Verlag E. S. Mittler und Sohn, 1999), pp. 144–45.

91. Cited in Andrei A. Kokoshin, *Soviet Strategic Thought, 1917–91* (Cambridge, Mass.: MIT Press, 1998), p. 79.

92. Bryan Ranft and Geoffrey Till, *The Sea in Soviet Strategy,* 2nd ed. (Annapolis, Md.: Naval Institute Press, 1989), pp. 94–95.

93. For the French and Soviet Young Schools, see Robert Waring Herrick, *Soviet Naval Doctrine and Policy 1956–1986* (Lewiston, N.Y.: Edwin Mellen, 2003), book 1, pp. 7–8; Gunnar Åsalius, *The Rise and Fall of the Soviet Navy in the Baltic, 1921–1941* (London: Frank Cass, 2005), p. 127; Erik J. Dahl, "Net-centric before Its Time: The Jeune École and Its Lessons for Today," *Naval War College Review* 58, no. 4 (Autumn 2005), pp. 109–35; and Milan L. Hauner, "Stalin's Big-Fleet Program," *Naval War College Review* 57, no. 2 (Spring 2004), pp. 87–120.

94. John F. Schmitt, *A Practical Guide for Developing and Writing Military Concepts,* Defense Adaptive Red Team, Working Paper 02-43 (McLean, Va.: Hicks & Associates, December 2002), p. 10.

95. Julian S. Corbett, *Some Principles of Maritime Strategy* (London: Longmans, Green, 1918), pp. 90–91.

96. See Milan Vego, *The Battle for Leyte, 1944: Allied and Japanese Plans, Preparations, and Execution* (Annapolis, Md.: Naval Institute Press, 2006), p. 352.

97. Ibid., pp. 315, 323, 352.

98. *Uticaj Mora i Posebno Uskog Mora Na Vodjenje Rata* (Belgrade: Viša Vojnopomorska Akademija, 1964), p. 8.

99. Guenther Poeschel, "Ueber die Seeherrschaft (I)," *Militaerwesen* (East Berlin) 5 (May 1982), pp. 41, 45, 74.

100. Juerg Meister, *Der Seekrieg in den osteuropaeischen Gewaessern 1941–45* (Munich: J. F. Lehmans Verlag, 1958), p. 340.

101. Michael Salewski, *Die deutsche Seekriegsleitung 1935–1945,* vol. 2, *1942–1945* (Frankfurt a.M., Fed. Rep. of Ger.: Bernard & Graefe, 1970), p. 384.

102. Guenther Poeschel, "Ueber die Seeherrschaft (II)," *Militaerwesen* (East Berlin) 6 (June 1982), p. 71.

103. M. G. Cook, "Naval Strategy," 2 March 1931, p. 12, Air Corps Tactical School, Langley Field, Va., 1930–1931, Strategic Plans Division Records, Series I, box 003, Naval Operational Archives, Washington, D.C.

104. Julian S. Corbett, *Naval Operations,* vol. 1, *To the Battle of the Falklands, December 1914,* History of the Great War Based on Official Documents (London: Longmans, Green, 1920), p. 163.

105. Geoffrey Till et al., *Maritime Strategy and the Nuclear Age,* 2nd ed. (New York: St. Martin's, 1984), p. 119.

106. Anthony Sokol, "Naval Strategy in the Adriatic Sea during the World War," U.S. Naval Institute *Proceedings* (August 1938), p. 1083.

107. Guenther Poeschel, "Ueber die Seeherrschaft (III)," *Militaerwesen* (East Berlin) 8 (August 1982), p. 62.

108. Bolfek, "Dejstva na pomorskim komunikacijama u uskom moru (I deo)," pp. 504–505.

109. Stephen W. Roskill, *The War at Sea 1939–1945,* vol. 3, *The Offensive,* part 1, *1st June 1943–31st May 1944* (London: Her Majesty's Stationery Office, 1960), p. 231.

110. Chaim Herzog, *The War of Atonement, October 1973* (Boston: Little, Brown, 1975), p. 264.

111. Ibid., p. 266.

112. Haghshenass, *Iran's Asymmetric Naval Warfare,* p. 7.

113. Fock, "Seestreitkraefte in Kuesten- und Randmeergebieten (II)," p. 632.

114. Joseph J. Stanko, "Coup d'Oeil or Confusion: An Assessment of the Common Operational Picture" (research report, Air Command and Staff College, Air Univ., Maxwell Air Force Base [hereafter AFB], Ala., April 1999), pp. 23–24, available at www.dtic.mil/.

115. Patrick J. Bindl, "Does a Common Operational Picture Result in Common Understanding of the Battlespace?" (course paper, Naval War College, Newport, R.I., May 2004), p. 3, available at www.dtic.mil/.

116. Ibid., p. 10.

117. Ibid.

118. Ibid., pp. 3–4.

119. Ibid., p. 4.

120. "Sensor fusion" is the process of combining measurements from two or more sensors into a single track. This process reduces redundant tracks and has the potential to increase the accuracy and resilience of the resulting track by incorporating multiple measurements from each target. The combination of sensor tasking and data fusion enables multiple sensors, based in space, in the air, at sea, or on the ground, to increase effectively the amount of information available. See John J. Barry III, *Deux* [*sic*] *ex Machina: Sensor Fusion in Network-Centric Warfare,* AU/ACSC/3271/ AY06 (Maxwell AFB, Ala.: Air Command and Staff College, Air Univ., April 2006), p. 9.

121. William D. O'Neill, *The Cooperative Engagement Capability (CEC): Transforming Naval Anti-air Warfare,* Case Studies in National Security Transformation, no. 11 (Washington, D.C.: Center for Technology and National Security Policy, August 2007), p. 3.

122. Stacey W. Yopp, *Aegis and the C/JFACC: The Naval Surface Combatant as an Element of Air and Space Power,* AU/ACSC/2395/AY06 (Maxwell AFB, Ala.: Air Command and Staff College, Air Univ., April 2006), p. 10.

123. O'Neill, *Cooperative Engagement Capability (CEC),* p. 3.

124. Yopp, *Aegis and the C/JFACC,* p. 12.

125. Cited in Barry, *Deux ex Machina,* p. 2.

126. Ibid., p. 7.

THE BULGARIAN NAVY AFTER THE COLD WAR

Challenges of Building and Modernizing an Effective Navy

Deborah Sanders

T his article examines the Bulgarian government's struggle to modernize its navy since the end of the Cold War. Although the Bulgarian navy is small, it is an important navy and an interesting case study, for two reasons: it plays an important role in protecting and advancing Bulgaria's interests in the maritime domain, and it operates in an increasingly challenging maritime environment.[1] Situated in the southeastern part of the Balkan Peninsula on the Black Sea, on which it has a long coastline, Bulgaria has important economic and security interests in the maritime domain, and its navy has a significant part to play in protecting these interests. Bulgaria's Black Sea ports of Varna and Bourgas are the gateways of 60 percent of the nation's foreign trade and are vital to its economy.[2] Bulgaria has also become one of the leading tourist destinations in Europe; tourism is one of the fastest-growing sectors of the economy.[3] Bulgaria's tourist industry is heavily concentrated in the Black Sea coastal resorts, and the government sees a threat to this industry from pollution at sea as a threat to national security.[4] The Black Sea—specifically, Bulgaria's ability to use it—also provides Sofia with

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the opportunity to diversify its energy resources, something that it recognizes as of vital security importance.[5] The Bulgarian navy also plays an important role in addressing the rise in the use of the Black Sea by organized crime groups.[6] Bulgaria, at the crossroads between the Balkans and Europe, lies on several maritime smuggling routes; according to Europol, the European Union (EU) law-enforcement agency, "Bulgaria now serves as a transit point for maritime shipment from Latin

America, trafficking from West Africa via Turkey and the Balkan routes, and cocaine destined for Italian criminal groups."[7]

The ability of the Bulgarian navy to protect its own security interests and NATO's southern flanks and borders in the Black Sea also matters, and increasingly so in light of recent events in the area. The Russian annexation of Crimea and the ongoing conflict in eastern Ukraine have created a more challenging maritime security environment than in recent years for Bulgaria and NATO members. Bulgaria's relations with the Russian Federation, a traditional ally, have become increasingly strained since the Bulgarian government criticized the Russian annexation and decided in June to suspend the construction of Bulgaria's section of South Stream, a new Russian gas pipeline that would bypass Ukraine.[8] In an additional clear sign of Bulgaria's concern about the security challenges in the Black Sea, the Bulgarian president has called for an increase in NATO's focus in the southeast, more joint exercises, and more active use of Bulgaria's military facilities by both NATO and the United States.[9]

In light of these concerns and the changed geostrategic environment, the United States and NATO allies have demonstrated commitments to Bulgaria and to the future development of the Bulgarian navy by engaging in a number of ship visits and naval exercises.[10] In June 2014 the American defense secretary, Chuck Hagel, visiting the Black Sea, made it clear that the United States would continue to sustain a strong naval presence in the region. He also outlined how the United States was stepping up cooperation with partners and allies surrounding the Black Sea, including Bulgaria.[11] In September, NATO, demonstrating its commitment to Bulgaria, opened a crisis-management center in Sofia to enhance capacity building, boost interoperability, and promote the training in local conditions for commanders and leaders from NATO member states.[12] But given Bulgaria's important security interests in the Black Sea and the growing concern among NATO allies about security there, it must be asked: Is the Bulgarian navy up to the task?

This article, in three sections, addresses this question and argues that although Bulgaria, a resource-constrained formerly communist state, has had some success in building a navy that can protect its interests in the Black Sea and work alongside its NATO allies, the results have been mixed. The Bulgarian government faces many difficulties in supporting and developing its navy over the long term. The first section examines the pernicious effect on the Bulgarian navy of the absence of defense reform in the decade after 1989, of political instability, and of declining defense budgets. The second section looks at how a decision by the Bulgarian government in 1997 to seek NATO membership created the impetus and political commitment necessary to implement a radical process of naval reform, a program that included the purchase of a number of secondhand naval platforms

and the introduction of a new personnel-management system that increasingly professionalized the navy. The last section, however, notes the failure of recent defense reforms, particularly in developing coherent and well-funded reform objectives. That failure, along with the continuing devastating effect of the global economic crisis on the Bulgarian economy, is seriously delaying and hampering the development of an effective and efficient Bulgarian navy.

THE EARLY YEARS OF INDEPENDENCE: FAILURE TO BUILD A PROFESSIONAL NAVY

Bulgaria's ability to build a navy after the fall of the Soviet Union (USSR) was adversely shaped by its Cold War legacy, the lack of defense reform for almost a decade after the communist leadership was replaced in 1989, and declining defense budgets. During the Cold War Bulgaria's defense posture was based on the assumption that the Warsaw Pact would provide unconditional assistance in the event of a military conflict. Bulgaria's role was to defend the alliance's southern flank; it had clearly defined enemies and tasks. The Cold War Bulgarian navy was to provide naval units to supplement those of the Soviet navy at Sevastopol to achieve maritime dominance in the Black Sea.[13] The Bulgarian navy was made up of four components: the Black Sea Fleet, the Danube Flotilla, a coastal-defense force, and a shore establishment. Its main force consisted of four *Pobeda*-class submarines, two *Drazki*-class frigates, five Poti-class corvettes, six Osa-class missile patrol boats, six Shershen-class torpedo boats, and ten patrol craft, with a total of ten thousand personnel.[14] In addition, the Bulgarian navy operated thirty mine-countermeasures ships, including four then-modern, Soviet-built, Sonya-class oceangoing minesweepers acquired in the early 1980s, two Polish-built medium landing ships, nineteen medium landing craft, and a squadron of three armed and nine unarmed search-and-rescue helicopters.[15]

As one of Moscow's most loyal allies, Bulgaria received not only military but economic assistance from the Soviet Union. Between 1946 and 1990 Bulgaria received almost U.S.$16.7 billion worth of military and defense industrial assistance.[16] The loss of military assistance from the USSR and the lack of subsequent investment in naval assets and capabilities by successive Bulgarian governments impacted negatively on the nation's maritime power. The loss of access to Soviet spares and upgrades resulted in serious deterioration in maritime equipment and capabilities. The delivery in 1990 of three Soviet Poti-class corvettes was to be the last addition to Bulgaria's maritime assets for fifteen years.

In light of the collapse of the USSR and the dismantling of the Warsaw Pact, Bulgaria could no longer rely on either for security, defense, maritime assistance, equipment, or aid. In the early 1990s Bulgaria was faced with developing a new defense policy, setting new strategic goals and priorities, and restructuring its

military forces. The Bulgarian government moved quickly to assume democratic control over the military. Legislation in 1990 depoliticized the military, and a new constitution a year later established executive control and parliamentary oversight of the Bulgarian armed forces.[17] The government appointed a civilian defense minister and changed the organizational structure of the Ministry of Defense. Despite this early progress in assuming democratic control over the military, however, defense reform over the next decade would be little more than cosmetic.[18] Between 1989 and 1997 not only did successive Bulgarian governments fail to prioritize defense reform but political instability and the poor state of the economy led to a rapid decline in the navy and the professionalism of personnel.

In fact, after the adoption of the law depoliticizing the military, the political parties in Bulgaria paid little attention to the problems of modernizing the navy. The absence of a political consensus on how to reform the state itself hampered agreement on defense. In the first eight years of independence (that is, of the communist bloc, the sense in which the term is used hereafter) Bulgaria had four parliamentary elections and eight changes of government, in which the two main parties, the Bulgarian Socialist Party (BSP) and the Union of Democratic Forces (UDF), alternated in power.[19] Neither the BSP nor the UDF secured enough seats in the parliament to push through much-needed legislation, resulting in endless bickering and parliamentary deadlock.[20] Due to the adversarial nature of the political system, Bulgarian politics during this period was stagnant, dominated by destructive "zero-sum games" in which decisions were driven by ideology or private and partisan interests.[21] As a result of the polarization between the two main political parties, hard political decisions, in particular how to reform and restructure the navy, were delayed.

The modernization of the Bulgarian navy was also hampered by the failure in the 1990s of the two main parties to agree on the direction of Bulgaria's foreign and security policy. In 1995 the government, headed by Zhan Videnov of the Socialist Party, finally published Bulgaria's first "National Security Concept." This document reflected deep division between the two parties over how best to address Bulgaria's security challenges. The Socialist Party viewed security in largely traditional ways, emphasizing accumulation of military power and the maintenance of ties with traditional allies; the UDF, for its part, sought integration with both NATO and the EU.[22] The failure of the two parties to agree meant that between 1989 and 1997 the navy was given no strategic guidance on how to redefine its roles, doctrine, and missions. As a result of this lack of strategic direction—in essence the failure of successive Bulgarian governments to engage in effective strategy and defense planning—the navy, like the remainder of the Bulgarian Armed Forces (BAF), was not reduced in size and retained its old, Cold War–era functions, tasks, and structures until the late 1990s.[23] One of the

pernicious effects of the lack of agreement on grand strategic goals and the failure to conduct a rational threat assessment was that the BAF remained at their 1991 level of 107,000 personnel almost eight years after independence.[24]

The poor state of the Bulgarian economy and the failure of successive Bulgarian governments to reform and restructure it systematically also had a negative effect on the post–Cold War navy. By 1990, the inefficient, centrally planned Bulgarian economy was close to collapse. The new government faced a decline in production, growing inflation and unemployment, a large budget deficit, a huge foreign debt, and the collapse of trade with traditional partners. In this economic crisis the defense budget was reduced by 38 percent, from $550 million in 1990 to $340 million in 1991.[25] A high rate of inflation in 1990 and through February 1991 further eroded the defense budget.[26] This decline continued, reaching an all-time low of $230 million in 1994.[27] In 1995 the defense minister not only asked for a quadrupling of the budget but also expressed concern that military reform and attempts to improve the social conditions of service personnel were being jeopardized.[28]

In an attempt to address the growing economic crisis, in the early 1990s the UDF government introduced an ambitious program of shock therapy, under which the Bulgarian economy showed tentative signs of recovery. In 1994 it recorded its first positive growth in real gross domestic product (GDP); a year later, inflation dropped to 33 percent.[29] However, failure by the Socialist Party, in power again from 1994 to 1997, to implement consistent structural reform, combined with lax fiscal and monetary policy, erased almost all of these achievements, and the Bulgarian economy once again declined rapidly. By the end of 1996 Bulgaria had become the "worst managed country in Europe."[30] Inflation was over 300 percent, GDP growth had fallen by more than 10 percent, and the currency had collapsed; the nation was plunged into deep recession.[31]

This economic crisis caused not only a significant decrease in defense expenditure but inflationary pressure that shrank the defense budget in real terms. Because of the failure of successive preceding governments to downsize the military, almost 90 percent of the declining defense budget was needed to cover personnel costs, leaving little scope for investment in new naval equipment, infrastructure, or support. After lengthy budgetary negotiations each year within the fractious Bulgarian parliament, the military received only a portion of what it requested—50 percent of it in 1995 and 46.4 percent in 1996.[32] The Bulgarian navy was forced to exist on a subsistence budget, with insufficient resources for training, spare parts, or procurement.[33]

By 1997 the navy, like the other two services, had become little more than a hollow structure, with "a totally distorted officer pyramid, lack of competent NCO's [noncommissioned officers], untrained conscripts [and] low readiness of

equipment."[34] The Bulgarian navy faced poor service conditions, a lack of clearly defined missions, and low morale. In 1995 the defense minister, Boyko Noev, had argued that the government's emphasis should shift from equipment to people.[35] In particular, he declared, defense reform needed to improve the living conditions of officers and stem corruption. This concern about service conditions was echoed by Noev's successor, Dimitur Pavlov, who stated that military pay scales remained low and housing was woefully inadequate, both owing to the lack of funds.[36]

As a result of such conditions the Bulgarian military struggled to retain and recruit officers. Many young officers cited poor service conditions as their main reason for leaving the military.[37] In mid-1998 new legislation cutting military severance pay from twenty months to six drove a high number of officers to apply for discharge.[38] Early attempts to move toward a semiprofessional—that is, only partly formed of conscripts—force were hampered by low pay. In 1997, the services failed to reach a target of recruiting up to 120 military professionals; interest in the new positions was extremely low.[39] At a monthly salary of between $73 and $110, only forty-eight military professionals joined.[40]

The Bulgarian military has also had problems with crime, corruption, alcohol, and drug abuse. In 1997 a dozen generals and other senior officers were punished for serious violations in misuse of state funds, theft from military stores, and other offenses.[41] In 1998 officials revealed that approximately U.S.$456,334 worth of items were missing from the 1997 army inventory and that forty-three personnel were being investigated.[42] Social problems including bullying, alcoholism, and drug abuse were other reflections of low morale in the 1990s and failure to develop a professional ethos. A report published in 1998 revealed that while reported cases of bullying had decreased, the numbers of drug addicts, alcoholics, and suicides among military personnel had increased.[43] Professionalism in the Bulgarian navy was compromised also by the lack of training. By 1997 the failure to fund or prioritize defense reform had resulted in a dramatic decline in the level of training across all three services, land, sea, and air.[44]

BUILDING A BULGARIAN NAVY: ONE STEP FORWARD, TWO STEPS BACK

In April 1997 a new majority government formed by the UDF and its allies was elected. It launched an ambitious economic reform package and provided clear foreign-policy direction that was to constitute the strategic guidance and political commitment that began the process of building a navy. To stabilize the economy the government established a currency board that pegged the Bulgarian unit of currency, the lev, to the German mark. The banking sector was reformed, and legislation was introduced to tackle crime. As a result of the new government's

policies, annual inflation, consumer prices, and unemployment fell.[45] The fixed exchange rate restored international confidence in the Bulgarian currency, and GDP increased by 4 percent in 1998.[46]

The UDF government also announced an intention to seek both NATO and EU membership. The decision to join NATO, in particular, created the impetus for and the framework of far-reaching defense reform. Over the next few years the government approved a series of documents that laid down the strategic guidance necessary to reform the military and build a navy. A National Security Concept was approved in April 1998, and a year later a new military doctrine and a defense-reform strategy, Plan 2001 (in October). Plan 2001 restructured, reduced, and, in its final phase, modernized the BAF. Under these proposals the BAF would become a smaller, more mobile, NATO-interoperable, and professional military with high operational effectiveness. The BAF would be reduced initially to seventy-five thousand and restructured into the Rapid Reaction Force and the First and Third Army Corps, the latter two at reduced manning levels.[47] The Rapid Reaction Force would consist of fully equipped and manned land, air, and naval components.[48] The final stage of defense reform involved reducing the BAF to sixty-five thousand personnel, later revised to forty-five thousand; the savings in personnel costs would be applied to modernization and NATO compatibility.[49] For the Bulgarian navy, rearmament and modernization would include the upgrading of command and control and of auxiliary ships and the introduction of mine-clearing capabilities.[50]

However, in the five years before Bulgaria joined NATO in 2004, the government struggled to make any real progress. In 2004 the majority of Bulgaria's maritime assets were still outdated and not interoperable with NATO forces.[51] The navy, which took on new responsibilities with NATO membership, had not received any new platforms since independence and was forced to carry on with outdated and rapidly decaying Soviet-era ships and equipment. It was clear that while the government had finally provided the strategic guidance necessary to build a small, professional navy, translating these goals into a coherent and well-funded plan was more difficult. In 2004, after the decommissioning and sale of old platforms, the Bulgarian navy was made up of two submarines, one frigate, and a number of fast patrol craft, corvettes, and minesweepers; as a whole, the navy was barely operational.[52]

Writing in 2004, the Naval Chief of Staff, Rear Admiral Emil Lyutzkanov, acknowledged that the navy was in urgent need of modernization to meet the expanded demands of NATO membership.[53] In that year the Bulgarian navy had three clear missions: first, guaranteeing Bulgaria's national sovereignty, security, and independence and protecting its territorial integrity, as well as fulfilling its commitments under article 5 of the NATO treaty; second, supporting international

peace and security; and third, contributing to national security in peacetime. To fulfill these missions effectively, Admiral Lyutzkanov recognized, the navy would need new ships and modernized coastal, sea, and airborne command-and-control, surveillance, and weapon systems that were fully interoperable with those of NATO allies.[54]

The new security and defense commitments led the Bulgarian government to conduct a Strategic Defense Review. This review led to the development of a long-term plan for transforming the BAF over the next decade. Under the Plan for Organizational Development and Modernization of the Structures of the Armed Forces, by 2015 the government would phase out conscription, making the BAF fully professional and thereby increasing its usability and effectiveness. To improve the operational capability of the BAF, in May 2004 the government approved eleven priority force-modernization projects including new equipment for the navy. The Bulgarian navy was substantially increased by the acquisition of three secondhand Belgian frigates and one minehunter. In October 2005 the navy took delivery of the first of its *Wielingen*-class frigates, *Drazki;* the second, *Gordi,* followed in August 2008. In 2009 the third frigate, *Verni,* and an ex-Belgian Flower-class minehunter, *Tsbar,* were also delivered.[55]

Bulgaria also has made significant progress in creating the conditions for the establishment of a professional naval force. It has created a new personnel management system, improved education and training, and has realized important benefits from active participation in regional and international military operations. The *White Paper on Defence,* published in 2011, outlined a policy and system for managing human resources so as to develop further the professionalism of the BAF.[56] The aim is to produce well-trained and highly motivated military service personnel at all ranks through effective and efficient personnel management. The new system eliminates irregularities in promotion and introduces a clear and strict procedure for appointments.[57] Relief and dismissal of all service personnel will be governed by strict rules, and rotation to new appointments will be designed to build an experienced, talented, and professional staff. The Bulgarian government has also recognized the importance of education. In 2012 it allowed officer candidates, noncommissioned officers, and privates to apply for and receive regular education at Bulgaria's military schools of higher education.[58] This will not only enhance the career development of service personnel but also help the navy recruit and retain professional-quality personnel.

Over the last few years successive Bulgarian governments have also acknowledged the importance of international cooperation and training. The 2011 white paper recognizes that the "experience gained by our forces and structures through participation in military operations has proven to be of exceptional importance."[59] In 2011, *Drazki* took part in the NATO operation that supported the arms

embargo against Libya, and the Bulgarian navy joined nine international and joint exercises.[60] During Exercise BREEZE/CERTEX 2011 the navy participated in crisis-response scenarios and developed its skills for addressing asymmetrical threats. The Bulgarian navy today regularly participates in the Turkish-led maritime-security operation BLACKSEAFOR; in August 2013 the minehunter *Priboy* conducted several exercises and visited Turkish and Russian ports.[61]

The Bulgarian navy has also introduced extensive simulation-based training and set up a NATO-dedicated Regional Centre for Training Ships' Crews. A center for training sailors and soldiers and a facility for preparing ships' crews for joint operations was successfully set up at the Naval Academy in Varna. In 2001 this facility also received navigational, engine-room, and Global Maritime Distress and Safety System simulators; these were upgraded in 2012.[62] The crew of the frigate *Smely* underwent the first course at this newly designated NATO-dedicated Regional Centre for Training Ships' Crews. Rear Admiral Lyutzkanov believes that such training has allowed the Bulgarian navy to become an important contributor to national security and to the collective security of NATO.[63]

ONGOING CHALLENGES OF BUILDING A BULGARIAN NAVY

Despite such progress, especially an increasingly professional cadre and new platforms that go some way toward allowing the service to perform its new roles, the Bulgarian navy continues to suffer from decline in its budget. As a reflection of the European economic crisis, Bulgaria's defense budget was reduced by 28 percent in 2010 and fell below 1.5 percent of GDP.[64] That is especially significant because the defense white paper states that the optimal balance between the capabilities of the BAF and resources available requires a defense budget no less than 1.5 percent of GDP.[65] The importance of the 1.5 percent threshold was reiterated by Defense Minister Anyu Angelov, saying it was the minimum needed to modernize the BAF.[66] In 2010 the Ministry of Defense budget was 1.42 percent, in 2012 it dropped to 1.24 percent, and a year later it was a mere 1.38 percent.[67] The Ministry of Defense formally conceded in September 2014 that owing to the financial austerity the defense budgets of 2010–14 had fallen to a dangerously low level.[68]

The inability to fund defense at 1.5 percent of GDP has delayed further refurbishment and modernization of maritime platforms, including plans to upgrade the frigates.[69] It has also left insufficient resources for maritime services, repairs, and spare parts, hampering maintenance and the normal functioning of the navy.[70] The last of Bulgaria's operational submarines, *Slava,* has been retired and will almost certainly not be replaced. In 1954 the Soviet Union had given Bulgaria three submarines and in 1958 two more, one of them *Slava*. Claims by the general staff of the Bulgarian navy in 2007 that two submarines would be purchased by

2012 failed to be borne out. Several Soviet-era missile boats and minesweepers have been decommissioned as well.[71]

Future naval modernization and upgrades have also been hampered by the requirement to prioritize future procurement in light of the shrinking budget. Anyu Angelov's top three investment priorities for the next decade are new multirole fighter aircraft, infantry fighting vehicles, and the modernization and upgrading of the frigates, including a capability to operate helicopters.[72] These objectives are, however, conditional on an average annual defense budget of 1.5 percent of GDP and a substantial reduction in personnel costs. At this writing the government planned to reduce personnel costs from 75 percent of the defense budget to 60 percent by 2014; that would increase capital expenditure from 1 percent of the budget in 2010 to 15 percent by 2014 and free as much as $1.5 billion by 2020 to acquire and upgrade military equipment.[73]

Meanwhile, budgetary constraints have forced the government to prioritize force modernization even more narrowly, and this will impact on Bulgaria's navy in the medium term. The top priority is now the purchase of new multirole fighter aircraft to replace the aging and outdated Soviet platforms.[74] Although this accession will augment Bulgaria's ability to protect its interests in the maritime domain, its cost will delay other maritime modernization (weapons and navigation systems for the navy, for instance) and future improvements until at least 2016.[75]

The Bulgarian government has allocated almost half its current $1.5 billion procurement budget to the purchase of eight or nine new or, more likely, used multirole fighter jets. Tenders were delayed, however, by the decline of the defense budget in 2012 and politicization of the issue. The delay is likely to delay in turn naval modernization.

Attempts by both the United States (directly) and the EU (indirectly) to shape Bulgaria's air procurement have further confused and impeded this pressing decision. As a result of the general economic downturn there has been fierce competition among European and American firms for the provision of Bulgaria's new multirole aircraft. A leaked American diplomatic cable suggests that the United States actively encouraged the Bulgarian government to purchase secondhand F-16s rather than the more expensive Eurofighters, Swedish Gripens, or Joint Strike Fighters. From the U.S. viewpoint, purchase of F-16s or F/A-18s would not only catalyze Bulgarian operational and tactical transformation but minimize pressure on a squeezed defense budget.[76] However, the EU has raised concerns about the Bulgarian government's decision to procure jets without holding an open tender.[77] In response to EU pressure, in late 2012 the Bulgarian government announced that it had held preliminary talks on the possibility of acquiring secondhand fighters from a number of European states as well as the United States.

The Bulgarian defense minister ruled out purchase from the European defense giant EADS or the U.S. firm Lockheed Martin, but there was still a possibility of buying Gripen fighters from Sweden.[78]

The Bulgarian government has therefore been forced to make a difficult choice between the favored alternative of deferring to its key ally the United States and abiding by the legal requirement imposed by EU membership for a transparent and open tendering process (risking further delay). In light of these political pressures on the aircraft decision, the Bulgarian navy is unlikely to be upgraded or modernized before the end of this decade.

Despite the significant improvements in training, education, and social conditions outlined above, problems remain that could hamper the growth of professionalization within the Bulgarian navy. As the defense white paper acknowledges, much of the military housing stock is in need of major repairs; as a result of the lack of funding, there has been a decline in its standard and quantity. Estimates suggest that needed improvements could cost up to $300 million.[79] In addition, morale is likely to be affected in the short term by downsizing of personnel and "transformation fatigue." Under plans announced in 2011 the Bulgarian military would be reduced from just over forty-four thousand to thirty-seven thousand by 2014, with the navy making up only 13 percent.[80] Recent estimates suggest, however, that the Bulgarian military has been even further downsized, to just below thirty thousand.[81] The problem of maintaining military morale in light of the ongoing failure of military reform and brutal downsizing by the government in light of the economic austerity is explicitly recognized in the white paper.[82] It is clear that the government is keenly aware of the challenge of motivating service personnel for what will be an extremely difficult next round of military transformation.

Further improvements in the navy are also likely to be adversely affected by the scale of the task of transforming the military generally. The Plan for Organizational Development and Modernization of the Structures of the Armed Forces has been heavily criticized for failing to deliver a modern, interoperable, and well-equipped Bulgarian military. During the initial stages of implementation the Ministry of Defense conceded that its ambitious objectives could not be met by 2015. Four key reasons were identified. First, budgetary constraints made it impossible.[83] Given the bloc obsolescence of BAF equipment the ministry had to prioritize key areas. Second, inability to reduce quickly the size of the defense sector restricted ability to invest in combat training or new equipment. Third, defense reform was hampered by lack of coordination among and integration of the Ministry of Defense, the General Staff, and the operating forces. Last, the Defense Ministry cannot assure financing for long-term projects.

In general, the Bulgarian Ministry of Defense was not institutionally ready to manage the reform process, and it lacked necessary financial and political support to make difficult decisions.[84] In 2009 the minister of defense, then Nikolay Mladenov, declared the current stage of defense reform had failed; a lack of clear prioritization and guaranteed funding for ambitious projects had led to many costly and not very wise decisions.[85] To that point more than three billion Bulgarian leva had been spent on modernizing the BAF but had produced little real increase in combat capabilities.[86]

The Bulgarian government responded in 2009 to the failure of reform with a "force structure review" that resulted in the new *White Paper on Defence.*[87] The white paper was an attempt to address directly what defense Bulgaria needs and, more importantly, what it can actually afford. It begins by recognizing that the principal objectives of the previous white paper had not been achieved; because of "arbitrary self-interested decisions for purchasing new equipment," the gradual process of building up the BAF's capabilities had to a large extent not taken place.[88] The white paper also explicitly recognizes the costly obligations made by previous governments to foreign and Bulgarian companies for armaments, technology, and services. In 2010 the government had to use state reserves to pay for several military contracts—involving transport helicopters, fixed-wing aircraft, armored utility vehicles, frigates, and minehunters—that had run into financial difficulties. The Bulgarian government has also been forced to renegotiate, cancel, or delay a number of major projects, with considerable effect on the navy. For instance, in 2009 the government canceled an agreement made four years earlier to buy four French Gowind corvettes, a deal estimated to cost up to U.S.$900 million.[89] In 2011 it renegotiated a contract signed in 2005 for navy helicopters.[90] The Bulgarian navy will now receive three rather than six Panther helicopters.

The bleak prospects for the Bulgarian navy are unlikely to improve until at least 2020. That calls into question the extent to which the navy can advance Bulgaria's interests or those of NATO allies in the Black Sea. At the recent NATO summit in August 2014 the Bulgarian government pledged to increase military spending gradually, from 1.33 percent of GDP to 1.5 percent by 2015 and subsequently by 0.1 percent of GDP each year, reaching 2 percent by 2020.[91] The Bulgarian president, Rosen Plevneliev, acknowledged his nation's low level of investment in military equipment and declared, perhaps optimistically, that by 2020 Bulgaria would set aside 15 percent of its defense budget for capital spending and new high-tech capabilities.[92]

In September 2014 the Bulgarian Ministry of Defense published "Bulgaria in NATO and in European Defence 2020," which stated that "given the rapidly evolving challenges of [the] modern strategic environment, without NATO Bulgaria does not have the necessary military resources to effectively guarantee its

security."[93] This document also spelled out its future priorities for the navy but not firm timelines for this very modest force modernization. Future plans include the modernization of its frigates to enable the Bulgarian navy to participate in sea traffic surveillance and control operations, detection of weapons of mass effect, and interchange of information in real time.[94]

Bulgaria has made some progress in building a navy able to advance its interests in the Black Sea and work alongside NATO allies. Modernizing the Bulgarian navy has, however, been a slow and difficult process, and future maritime upgrading and modernization, as well as the recruitment of a sufficient number of professional sailors, are likely to be undermined by the scale of the task and by the high cost of completing Bulgaria's broader military transformation. Initial delays in defense reform during the 1990s followed by, a decade later, poorly conceived, insufficiently funded, and overly ambitious attempts to create rapidly a modern NATO-interoperable navy have left a burdensome legacy. Aside from a core force of secondhand warships, the navy's platforms are "old, inadequate and mostly non-operational leaving the Bulgarian navy struggling to establish viable operational capability with sufficient numbers of properly trained personnel."[95] This situation is unlikely to improve in the medium term. The requirement to prioritize defense spending, insufficient military funding year on year, and high personnel costs will delay the planned upgrade of Bulgaria's frigates and the modernization of its auxiliary platforms until at least 2020.

NOTES

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1. For a discussion of small navies see Michael Mulqueen, Deborah Sanders, and Ian Speller, eds., *Small Navies: Strategy and Policy for Small Navies in Peace and War* (Farnham, U.K.: Ashgate, 2014).

2. This point was made by Rear Adm. Minko Kavaldjiev, former Chief of the Navy, Republic of Bulgaria, at an international conference, "Strengthening Black Sea Maritime Security," Sofia, 1–3 November 2005; proceedings available at eaei.files.wordpress.com/2008/01/black-sea.pdf.

3. "Bulgaria Tourism Statistics for First 6 Months of 2012," *FTN.news,* 29 July 2012, ftnnews.com/; Ministry of Foreign Affairs of Denmark: The Trade Council, "Tourism Sector Bulgaria," *Denmark in Bulgaria,* May 2012, bulgarien.um.dk/.

4. *National Security Strategy of the Republic of Bulgaria* (Sofia: Ministry of Economy and Energy), esp. para. 35 for details, www.mi.government.bg/.

5. Ibid., para. 20.

6. *Better Management of EU Borders through Co-operation* (Sofia, Bulg.: Centre for the Study of Democracy, 2011), available at ec.europa.eu/.

7. "The Untouchables: Organised Crime Grows Stronger in Bulgaria," *Jane's Intelligence Review,* 16 June 2011.

8. "Bulgaria Suspends South Stream Gas Pipeline Project," *BBC News Business,* 19 August 2014, www.bbc.co.uk/.

9. "Bulgaria Calls for More NATO Troops in Southeastern Europe," *Voice of America News/Europe,* 22 July 2014, www.voanews.com/.

10. "NATO Warships to Drop Anchor in Bulgaria's Varna," Sofia News Agency, 19 September 2014, novinite.com/; "US, Romanian and Bulgarian Navies Start Drills near Russian Border," Naval Technology.com, 13 March 2014, www.naval-technology.com/; "*Vella Gulf* Arrives in Burgas, Bulgaria," *America's Navy,* 7 August 2014, www.navy.mil/.

11. Lolita C. Baldor, "Hagel Tours US Navy Cruiser Deployed off Romania," *The Big Story,* Associated Press, 5 June 2014, bigstory.ap.org/.

12. "NATO Crisis Management Centre Opens in Bulgaria," Sofia News Agency, 17 September 2014, novinite.com/.

13. "Warsaw Six Increase Their Standing in NATO Circles," *Jane's Navy International,* 24 October 2011.

14. Library of Congress, "Naval Forces," in *Bulgaria: A Country Study (*June 1992), available at lcweb2.loc.gov/.

15. Ibid.

16. Dimitar Dimitrov, *Civil-Military Relations and Defence Budgeting in Bulgaria,* Harmonie Paper 6 (Groningen, Neth.: Centre for European Security Studies, May 1999).

17. Laura Cleary, "The New Model Army? Bulgarian Experience of Professionalism," in *The Challenge of Military Reform in Postcommunist Europe,* ed. Anthony Forster, Timothy Edmunds, and Andrew Cottey (Houndmills, U.K.: Palgrave, 2002).

18. Velizar Shalamanov, "Civil-Military and Inter-agency Cooperation in the Security Sector in Bulgaria," in *Security Sector Reform, Does It Work? Problems of Civil-Military and Inter-agency Cooperation in the Security Sector,* ed. Philipp Fluri and Velizar Shalamanov (Geneva: DCAF-GCMA, 2003), pp. 79–114, available at www.dcaf.ch/.

19. Emil Giatzidis, *An Introduction to Post-communist Bulgaria: Political, Economic and Social Transformation* (Manchester, U.K.: Manchester Univ. Press, 2002), p. 60.

20. Trevor Waters, *Bulgaria: Now on Track for a Secure Future?* (Sandhurst, U.K.: Royal

Military Academy Conflict Studies Research Centre, 1999).

21. Giatzidis, *Introduction to Post-communist Bulgaria,* p. 60.

22. Blagovest Tashev, *In Search of Security: Bulgaria's Security Policy in Transition,* Papeles del Este 8 (Madrid, Sp.: Universidad Complutense Madrid, 2004).

23. Colin Gray, *Strategy and Defence Planning: Meeting the Challenge of Uncertainty* (Oxford, U.K.: Oxford Univ. Press, 2014).

24. Jeffrey Simon, "Bulgaria and NATO: 7 Lost Years," *Strategic Forum,* no. 142 (May 1998).

25. Lisa J. Carlson, "Civil-Military Relations in Bulgaria," in *The Military and Society in the Former Eastern Bloc,* ed. Constantine P. Danopoulos and Daniel Zirker (Boulder, Colo.: Westview, 1998), pp. 95–114.

26. Dimitrov, *Civil-Military Relations and Defence Budgeting in Bulgaria,* p. 17.

27. Ibid., p. 20.

28. Carlson, "Civil-Military Relations in Bulgaria," p. 107.

29. Giatzidis, *Introduction to Post-communist Bulgaria,* p. 89.

30. Ibid., p. 91.

31. Waters, *Bulgaria,* p. 5.

32. Cleary, "New Model Army?," p. 145.

33. Dimitrov, *Civil-Military Relations and Defence Budgeting in Bulgaria,* p. 52.

34. Shalamanov, "Civil-Military and Inter-agency Cooperation."

35. "New Defence Minister Wants a Big Budget Rise," Bulgarian Telegraph Agency, 29 January 1996, cited by Carlson, "Civil-Military Relations in Bulgaria."

36. Carlson, "Civil-Military Relations in Bulgaria," p. 104.

37. F. Stephen Larrabee, "The Military in Balkan Politics," in *Common Security Regimes in the Balkans,* ed. Kostas Tsipis (New York: Columbia Univ. Press, 1996), p. 149.

38. Govt. of Canada, *Bulgaria: Status of the Security Services and the Army* (Ottawa, Ont.: Immigration and Refugee Board, Research Directorate, 1 November 1998), p. 7.

39. Ibid.

40. Ibid., p. 6.

41. Waters, *Bulgaria,* p. 16.

42. Govt. of Canada, *Bulgaria: Status of the Secu-rity Services and the Army,* p. 7.

43. Ibid.

44. Valeri Ratchev, "Implications for the Evolu-tion of National Security Institutions and the Decision-Making Process in Bulgaria," p. 34, available at www.researchgate.net/.

45. Waters, *Bulgaria,* p. 10.

46. Ibid.

47. Simon, "Bulgaria and NATO," p. 5.

48. Cleary, "New Model Army?," p. 141.

49. Simon, "Bulgaria and NATO," p. 6.

50. Waters, *Bulgaria,* p. 15; Todor Tagarev, "Prerequisites and Force Modernization in a Transition Period," *Information & Security* 6 (2001), pp. 30–52.

51. Nikola Yakov, "The Strategic Defence Review Process as a Tool for Conceptualising Defence Doctrine and Structure Reforms in the Bulgarian Military: The Bulgarian Experience and Lessons Learned," *Bundesheer,* www.bmlv .gv.at/.

52. "Warsaw Six Increase Their Standing in NATO Circles."

53. Emil Lyutzkanov, "Bulgaria in NATO: New Roles and Capabilities of the Navy," *Informa-tion & Security* 13 (2004), pp. 9–34.

54. Ibid., p. 23.

55. The purchase of these frigates revealed problems with the procurement process that will need addressing in the future if Bulgaria is to build an effective navy—a tendency to focus on the up-front costs and overlook the expenditure on operations and maintenance of military equipment. For details see Georgi Tsvetkov, "Maritime Defence Investment Policy of the Republic of Bulgaria," *Informa-tion & Security* 27 (2011), pp. 163–73.

56. National Assembly, *White Paper on Defence and the Armed Forces of the Republic of Bul-garia* ([Sofia,] Bulg.: [2011]), pp. 50–51.

57. Avgustina Tzvetkova, "Bulgaria Uproots Corruption," *Per Concordiam: Journal of European Security and Defence Issues* 3, no. 1

(6 June 2012), pp. 10–12, available at www .marshallcenter.org/.

58. Anyu Angelov, "Relevant Issues and Chal-lenges Facing the Defence Policy of the Republic of Bulgaria" (lecture, G. S. Rakovski Military Academy, Sofia, 1 September 2012).

59. National Assembly, *White Paper on Defence,* p. 20.

60. Republic of Bulgaria, *Annual Report on the Status of Defence and the Armed Forces of the Republic of Bulgaria* (Sofia: Council of Min-isters, 2012) [hereafter Council of Ministers, *Annual Report*], p. 15.

61. For details see "BLACKSEAFOR 2013," *Black Sea: History of Visits,* blackseaships.ru/. BLACKSEAFOR was not activated in 2014.

62. "Bulgaria: Transas Upgrades Training Complex for Naval Academy," *Naval Today,* 3 October 2012.

63. Lyutzkanov, "Bulgaria in NATO," p. 23.

64. Nick Iliev, "Bulgaria Military Spending Down by 28% in 2010," *Sofia Echo,* 11 April 2011.

65. National Assembly, *White Paper on Defence,* p. 18.

66. Elizabeth Konstantinova, "Bulgaria to Spend $1.5 Billion on Military Equipment by 2020," Bloomberg.com, 21 April 2011.

67. Council of Ministers, *Annual Report.* Also see Andrey Pospelov, "State Challenges and Prospects of Modern Military Reforming in the Republic of Bulgaria," *Borysfen Intel,* 31 October 2013, bintel.com.ua/.

68. Republic of Bulgaria, "National Programme: Bulgaria in NATO and in European Defence 2020," decision adopted by the Council of Ministers on 3 October 2014, available at www.md.government.bg/en/.

69. Council of Ministers, *Annual Report,* p. 8.

70. Ibid., p. 14.

71. "Bulgarian Navy Set to Discard Submarine Force," Sofia News Agency, 23 July 2010, novinite.com/; "Bulgarian Navy Faces Trim-ming, Modernisation: Defence Minister," *Sofia Echo,* 12 April 2011.

72. Angelov, "Relevant Issues and Challenges."

73. National Assembly, *White Paper on Defence,* p. 30. For details of spending on defense see

Konstantinova, "Bulgaria to Spend $1.5 Billion on Military Equipment by 2020."

74. For a discussion of the requirements see Constantine Popov, "Contribution of the New Main Combat Aircraft to Bulgaria's Defence Capabilities," *Information & Security* 25 (2010), pp. 13–16.

75. Konstantinova, "Bulgaria to spend $1.5 Billion on Military Equipment by 2020." See "Sentinel Security Assessment: The Balkans," *Jane's Sentinel Country Risk Assessment,* 29 July 2011.

76. "US Sought to Shape Bulgaria Military Strategy, Cable Shows," *Balkan Insights,* Novinite (Sofia Press Agency), 2 February 2011. The Wikileaks report talks about how Bulgaria should buy F-16 and F/A-18 fighters, while the Bulgarian government itself has been discussing the possibility of buying second-hand F-16s and F/A-18s from other NATO members.

77. "EU Warns Romania, Bulgaria, Czechs over Defence Procurement," *Actmedia,* 4 September 2012.

78. "Bulgaria Seeks to Buy 8 or 9 Fighter Jets," Sofia News Agency, 27 October 2012, novinite.com/.

79. Figures taken from National Assembly, *White Paper on Defence,* p. 49. The figure is cited in euros (230 million) and was converted into dollars on 7 December 2012.

80. Ibid., pp. 28–29.

81. Nick Thorpe, "Bulgaria's Military Warned of Soviet-Era 'Catastrophe,'" *BBC News Sofia,* 14 October 2014.

82. National Assembly, *White Paper on Defence,* p. 68.

83. Simeon Nikolov, "The Ministry of Defense Armed Forces Transformation Management

Policy," *Information & Security* 23, no. 1 (2009), pp. 11–17.

84. Velizar Shalamanov, "Bulgarian Defence Reform from 1990–2008 as a Change Management Process and the Role of Integrity Building," *Connections* 8, no. 3 (Summer 2009), pp. 85–109.

85. Nikolay Mladenov, "The Current Challenge and Major Priorities of Bulgaria's Defence Policy" (speech, G. S. Rakovski Military Academy, Sofia, 1 September 2009).

86. Shalamanov, "Bulgarian Defence Reform," p. 97.

87. National Assembly, *White Paper on Defence,* p. 5.

88. Ibid., pp. 11–12.

89. Tim Fish, "Bulgaria Cancels Plans to Purchase Gowind Corvettes," *Jane's Navy International,* 15 October 2009.

90. "Bulgaria Navy Finally Gets 1st Panther Helicopter in Troubled Eurocopter Deal," Sofia News Agency, 9 October 2011, novinite.com/.

91. "Bulgaria to Pledge Army Budget Hike at NATO Summit," Sofia News Agency, 31 August 2014, novinite.com/.

92. Clive Leviev-Sawyer, "NATO Forces in South Eastern Europe Should Be Increased, Bulgarian President Plevneliev Says," Independent Balkan News Agency, 23 July 2014. Also see Mathew Smith, "Bulgaria Agrees to Direct Up to 20% of Defence Budget to Equipment," *IHS Jane's Defence Industry,* 18 August 2014.

93. Republic of Bulgaria, "National Programme," p. 8.

94. Ibid., p. 15.

95. "Sentinel Security Assessment: The Balkans."

A QUESTION OF ESTIMATES

How Faulty Intelligence Drove Scouting at the Battle of Midway

Anthony Tully and Lu Yu

Since 2005, when *Shattered Sword: The Untold Story of the Battle of Midway* was published, there has been much discussion about its conclusions. Likewise, in the course of time there have appeared books like John Lundstrom's *Black Shoe Carrier Admiral,* Dallas Isom's *Midway Inquest,* Elliot Carlson's *Rochefort's War,* and Craig Symonds's *The Battle of Midway,* and several articles of note. One of the most interesting interpretations of the battle is *Midway Inquest,* which came out in 2006. While we cannot accept all of Isom's arguments, he does make a key point—that Admiral Nagumo Chūichi and his 1st Air Fleet staff have been scapegoated, given too much of the blame for the Midway debacle. This is particularly true when it comes to the supposedly faulty reconnaissance arrangements utilized during the battle.

In *Shattered Sword*'s account, Jon Parshall and Tully distributed blame more equitably between Admirals Yamamoto Isoroku and Nagumo, with Yamaguchi Tamon (commander of Carrier Division, or CarDiv, 2) coming in for a small share of criticism as well. Though the authors of this article believe this interpretation still basically holds true, we also feel that the picture can now be sharpened considerably regarding the degree of culpability of Nagumo and his staff. In a few particulars, we now feel that *Shattered Sword*'s account is still too critical of Nagumo.

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This revision is driven by additional publications in the Japanese literature on the battle appearing since 2005.[1] These have been supplemented by insights derived from a closer study of the reconnaissance arrangements of the Japanese carrier fleet (Kidō Butai) during 1941–42. These both support Isom's point that Nagumo's decisions were understandable—at least to a degree—and have been criticized too harshly.

In the article that follows, the interpretation is offered that Nagumo and the 1st Air Fleet staff on the whole made no egregious mistakes with respect to the scouting arrangements at Midway. More precisely, the conduct of Kidō Butai was not out of line with 1942 operations prior to Midway or even those during the Guadalcanal campaign, when the Japanese were operating with the advantages of hindsight from Midway. Nor was it worse than typical American scouting arrangements during the same time frame. During all of these battles, Japanese scouting operations were universally governed by the prevailing situation estimates in the hands of the carrier commanders. Accordingly, the key to understanding Midway becomes discovering with greater clarity what the real mind-set was among the staff on board *Akagi* on the morning of 4 June, prior to the battle.

This article presents three items for consideration. First is a discussion of the newer scholarship from Japan and its implications for the study of the battle. The second is a review of the scouting arrangements used by both the Japanese and Americans during the early months of the war. Third, we present a clarified picture of the intelligence that Nagumo had in hand prior to the battle. All of these factors are then used to analyze why Nagumo and his staff made the decisions they did.

NEW JAPANESE SCHOLARSHIP

While there has been much interesting work on the battle in Japan, our focus here is on the records of the 1st Air Fleet. One of the most interesting new revelations here is startling evidence of both deceptions and deletions in the primary source material regarding the 1st Air Fleet staff's expectations prior to battle. This was not entirely unsuspected. In *Shattered Sword,* Tully and Parshall noted instances suggesting selective deletions of Japanese records. Among others, these included message groups of Destroyer Division 4 (Kidō Butai's escorting destroyer unit) that appear to obscure the scuttling of *Kaga* and *Sōryū*. The possibility of such omissions now appears to have received a degree of corroboration.

These suspicions were enlarged with the publication in 2012 of Mori Shirō's *Middowei Kaisen* (Naval Battle of Midway). It contains important interviews, some posthumously released, of Midway participants. The most intriguing is of Air Staff Officer Yoshioka Tadakazu, who was in charge of preparing the 1st Air Fleet's postbattle report (since translated into English and known as the "Nagumo

Report").[2] Yoshioka admitted to Mori that there had been an omission in the reproduction of the message log that he compiled. In a radio message of 0220, or 0520 local time (2:20 and 5:20 AM), a significant first sentence originally stated, "It is calculated [projected] that enemy Kidō Butai will not sortie [be encountered] today." This sentence was dropped from Nagumo's report as actually submitted.[3] Indeed, this omission was not even disclosed by Yoshioka to the writers of the official Japanese war history series, *Senshi Sōsho*.

Regarding the significance of his deletion, Yoshioka pulled no punches: "The real reason of defeat is that deleted message."[4] What Yoshioka was referring to was the crucial role that the mind-set on *Akagi*'s bridge played in the battle. He considered the true reason for the defeat at Midway to be what the deleted sentence reveals—that Nagumo and his staff did not expect, and therefore did not even prepare for, contact with an enemy carrier force on the morning of 4 June. Everything that followed flows from this faulty estimate of the situation. Furthermore, this estimate was not necessarily unreasonable or negligent, given the intelligence that Nagumo had in hand prior to the battle. This intelligence, though, was faulty, and responsibility for that must be fairly laid at the feet of the Combined Fleet's staff.

That Yoshioka's superiors agreed with his postwar admission is, in effect, strongly suggested by the deletion of that crucial sentence. Yoshioka frankly admitted to Mori that to protect the navy's reputation, some inconvenient truths had to be concealed in the Nagumo Report.[5] The omission of part of the 0520 signal was just one instance. There were other cases of misdirection and fabrication as well, which then passed into Midway lore. These included the delayed launch of the cruiser *Tone*'s floatplane leading to the crucial late sighting report claimed by Genda Minoru and the "fateful five minutes" claimed by Fuchida Mitsuo and Kusaka Ryūnosuke.[6]

The main objective of these falsehoods was apparently to make the defeat seem due to plain bad luck on the day of battle rather than to the frame of mind on *Akagi*'s bridge. If that is the case, it sheds fresh light on the demonstrable distortion of the record by both Fuchida's and Kusaka's accounts (Fuchida's *Midway: The Battle That Doomed Japan* having been particularly important in the West). In *Shattered Sword,* the writers wondered whether the misleading conventional rendition of events had been the work of just these men or whether responsibility was more widespread. It now appears there was an "understanding" among select staff officers about how the defeat was to be "spun" (to use a modern term). The mental unreadiness of Kidō Butai for engaging an enemy carrier on the morning of 4 June was to be downplayed or even suppressed. Instead, misfortunes of timing and "fates of war" were to be emphasized, as well as how narrow the margin apparently had been between victory and defeat.

Incredibly, it is entirely possible that Naval General Staff in Tokyo never heard otherwise, because scarcely was the 1st Air Fleet report submitted, in mid-June, than the Guadalcanal campaign was upon the Japanese. Postwar, senior officers who had been involved at Midway were free to reinforce this "agreed" account. We stress that it is not entirely clear how much of the above comes from Yoshioka's words and how much is Mori's judgment. But we hope to show that Yoshioka's words accord with the evidence. When compared to other Japanese carrier operations, the nature of the scouting arrangements at Midway strongly implies that Nagumo and his staff had already ruled out enemy surface contact that morning.

If this revelation by Yoshioka is true, it means that on the morning of 4 June Nagumo's force was already operating under an even more severe handicap than previously realized. It has been well known since the 1970s that the Japanese Midway plan had been disclosed to the U.S. Navy's code breakers. The crucial element of surprise had been lost to the Japanese. It is not much of an exaggeration to say that from that point forward the probability of the MI plan's succeeding was seriously reduced. But in addition to this terrible burden, there was now added another—that Nagumo and his staff took their own intelligence estimates at face value. Accordingly, their preparations all but dismissed the possibility of a carrier battle on that first day.[7] This is critical—loss of surprise could conceivably have been compensated to some degree by a healthy dose of caution and even pessimism on *Akagi*'s bridge that morning. Yoshioka's revelation makes plain that such concerns were absent.

A reasonable objection at this point might be that however persuasive this revelation, it remains simply the claim of a single participant, Yoshioka. However, it is quite possible to demonstrate the truth of Yoshioka's statement by looking at the actions taken by Nagumo and his staff before the battle and then comparing them to the precedent established by other operations. To this we now turn.

HOW SITUATION ESTIMATES DROVE SCOUTING ARRANGEMENTS

Among the reasons for defeat at Midway, one of the most routinely cited is the "inadequate" morning search made by Kidō Butai, wherein seven aircraft were launched to cover most of the fleet's eastern flank. The analysis made by the U.S. Naval War College's Admiral Richard Bates in 1948 was one of the first to put across this idea, and in many respects it has stood the test of time. Likewise, it bears noticing that in attempting to fix blame for the defeat, Fuchida and Admiral Ugaki Matome, chief of staff of the Combined Fleet at the time, both chose to criticize retroactively the search methodology used at Midway. However, upon closer examination, it can be seen that Nagumo's searches were on par with

Japanese conventions at that time. Indeed, they were also not worse than contemporary U.S. carrier searches, given similar prebattle intelligence.

For instance, Nagumo's and the 1st Air Fleet staff's scouting decisions at Midway show a striking continuity with those used in the Indian Ocean operations of April 1942. In each case the factor determining what search type was used on a given day was whether the situation estimate shaped the factor that an enemy fleet was expected. If no enemy was expected, searches were correspondingly less comprehensive.

Kidō Butai had sailed for the Indian Ocean on the basis of an operation order issued on 19 March. This order advised that "the British fleet apparently has three battleships, two carriers, four Type A cruisers and eleven Type B cruisers in the Indian Ocean. Apparently 500 planes are in India (including Ceylon). A considerable part of the above is deployed in Ceylon area."[8] This estimate is rather similar to that of U.S. strength prior to Midway, namely, two carriers plus a possible third in the Pacific area (exact whereabouts unknown) and several squadrons of aircraft on Midway.

On the basis of its 19 March estimate, Kidō Butai launched raids against Ceylon on 5 and 9 April. Despite his having been sighted by a British flying boat at 1855 on 4 April (and intercepting that plane's report), Nagumo's morning search of 5 April prior to the Ceylon raid was even thinner than the one used at Midway two months later.[9] His scouts were fewer, and they went out a shorter distance. This was because the Japanese intelligence estimate strongly counterindicated the presence of British carriers nearby on that day. However, after the 5 April attack on Colombo and the subsequent sinking of the British cruisers *Dorsetshire* and *Cornwall,* suspicion built among Nagumo's staff that British carriers might be nearby after all. At 1600 on the 5th, two enemy carrier-type planes were sighted. Given their position 350 nautical miles (nm) south of Colombo, it seemed unlikely they were land-based.[10] Given this, Nagumo deployed for 6 April a search that was far denser than the day before. However, it found nothing, and tensions eased again. When the time came to strike Trincomalee on 9 April, no enemy carriers were expected, and Kidō Butai's morning search was similar in density to that made on the 5th and to the later one at Midway (see maps 1–4).[11]

This pattern applies to other battles as well. CarDiv 5's searches at the battle of the Coral Sea on 7 May (six fifteen-degree sectors, 250 nm range) closely resemble the search made on 6 April off Ceylon.[12] In both cases, Kidō Butai expected the possibility of at least sighting enemy carriers and shaped its search patterns accordingly. This pattern can also be seen after Midway. In the battles of both the Eastern Solomons and Santa Cruz, Japanese searches were markedly better, but they were driven by the fact that Nagumo and his staff expected enemy carrier opposition.

MAP 1
SEARCHES: 5 APRIL 1942

Source note: Search tracks in maps 1–3 constructed on the basis of Kidō Butai message orders no. 73, 74, 75, 77, and 80; Desron 1 WD, April 1942; CarDiv 5 Detailed Action Report No. 5; and *Hiryū* Detailed Action Report No. 9. Maps © 2014 by Jon Parshall, reprinted by permission.

MAP 2
SEARCHES: 6 APRIL 1942

In cases where carriers were *not* expected, searches could be scanty to downright nonexistent. For instance, Admiral Yamaguchi, despite his reputation for alertness and aggressiveness, did not bother launching a long-range advance search when CarDiv 2 arrived off Wake Island to deliver its attack on 21 December 1941.[13] It is true that the Japanese had four flying boats from land bases conducting searches; these, however, were not sufficient to detect U.S. carriers had the carriers been approaching from the north.[14] Likewise, during the Aleutians operations coinciding with Midway, CarDiv 4 launched on 3 June searches toward Dutch Harbor that were far less dense than the ones Nagumo would use the following day. In this case, aircraft from the light carrier *Ryūjō* searched to merely sixty miles on four fifteen-degree sectors.[15] The Japanese rightly downplayed the chance of an enemy fleet being present in the Aleutians, though such cursory searches appear more than a little brazen even so.

Nor were Japanese searches markedly worse than those used by the Americans at this time. For instance, during the U.S. carrier raids in

**MAP 3
SEARCHES: 9 APRIL 1942**

February and March against Makin, Kwajalein, Jaluit, Marcus, and other locations, there were apparently *no* morning searches before the attack launches.[16] Had the three Japanese carriers anchored at Truk in early February *(Akagi, Kaga,* and *Zuikaku)* had timely intelligence, they might have surprised the Americans, with disastrous consequences.[17] Even as late as the landings on Guadalcanal in early August, Allied search vectors were comparatively thin. A flank attack by Japanese carrier forces might have come down undetected from the north, though that was made less likely by the coverage of land- and tender-based search assets.[18] The bottom line is that in early 1942 U.S. carrier operations too were indifferent to extensive advance searches. This illustrates that in 1942 the practice of how to prepare for and fight a carrier battle was still very much a learning process for both sides.

**MAP 4
MIDWAY SEARCH TRACKS**

In sum, Nagumo's searches at Midway may have turned out to be inadequate, but they represented the norm for both sides at this point in the war. They were certainly not especially different from that norm or lacking in some special way. They cannot be described as "mistaken," unless one chooses to criticize the bulk of 1942 carrier searches (which would be, perhaps, fair

enough). The flaws of Nagumo's and Genda's search plan at Midway were system-ic and characteristic of everyone's "learning curve" at the time. Thus, Nagumo's search plan at Midway was not a cause of Kidō Butai's unreadiness for a carrier battle but rather a symptom of it. Indeed, there is a final irony here, that the 4 June search was actually better than almost all the other searches made by either the Japanese or the Americans *when no enemy fleet opposition was expected*. Had Nagumo actually expected an enemy carrier force that morning, he almost certainly would have sent out a denser search, in accordance with operational precedent. The question then becomes, why did Nagumo believe that no enemy carriers would be nearby that morning?

NAGUMO'S SITUATION ESTIMATE

Though some ambiguity persists, the failures of intelligence on the Japanese side appear to center more on *Yamato* and the Combined Fleet staff's choices than on those of the 1st Air Fleet staff on *Akagi*. Some crucial reports were not retransmit-ted to Nagumo, and no attempts were made to confirm that he was aware of them.

Submarine Sightings. After departure from Saipan, Tanaka Raizō, commander of the Transport Group of Midway Invasion Force, received various reports on en-emy submarine activities. On 30 May he received a report that an enemy subma-rine had been detected three hundred nautical miles north-northeast of Midway at 1130 by radio interception.[19] The reported position was close to his planned route to Midway.[20] To avoid this potential threat, Tanaka made a course change to the north on 1 June.[21] Also on the 30th, a transport in Tanaka's force sent a message, "At 1130 this ship's communication unit intercepted enemy submarine's urgent message to Midway with call sign NERK. Frequency 12,795 kc. The feeling [signal strength] is very strong so it is judged that the submarine is close."[22] Two planes were launched to search but found nothing.[23] There were several more submarine sightings by planes or ships of the Transport Group, plus radio in-terceptions by various communication units.[24] Ironically, according to Ameri-can sources it appears that there was no U.S. submarine operating near Tanaka's Transport Group at that time.[25]

Combined Fleet headquarters, on board the battleship *Yamato,* received at least some of these reports; Admiral Ugaki noted as much in his diary on 30 May.[26] When the reported position was plotted, though, it was found to be still far ahead of the Transport Group. Therefore, for the sake of radio silence, the news was not relayed to Nagumo.[27] Actually Ugaki (and probably other members of Combined Fleet staff) showed little concern that the U.S. forces might be alerted; as he later wrote, "If the dispatched message was a report of discovering our force, it would surely serve to alert the enemy, thus contributing to making our game in battle heavier."[28]

It is not clear how many, if any, of these reports reached Nagumo.[29] What is clear is that he didn't think Tanaka's Transport Group might have been sighted by a submarine. As Yoshioka later recalled, "After the Transport Group departed from Saipan, we did not receive any report that they seemed to have been sighted by enemy submarines. Therefore, although after that we were informed of an increase in enemy's urgent messages and received radio message that enemy movement became active, we were unable to determine what these meant."[30] This point is crucial. If Tanaka had been definitely sighted this early, Nimitz could have deduced that Midway was the target and would have had time to deploy his carriers. Not being supplied with reports on U.S. submarines (even though many were mistaken in hindsight) cost Nagumo a valuable source of intelligence.

Carrier Signal Detected. When Nagumo's force departed the Inland Sea on 27 May, the Combined Fleet had a sighting report dated 15 May of Admiral William Halsey's two carriers (which had been cleverly ordered by Nimitz to make sure they were detected) operating in the South Pacific. Accordingly, it was estimated that U.S. carriers would not show up in the initial stage of the Mɪ Operation.[31] However, this assessment grew murkier as battle approached. On the night before the battle (4 June, Japan time), *Yamato*'s radio interception unit picked up a U.S. carrier call sign near Midway. It was thought that *Akagi,* being closer to Midway, should also have intercepted it. Combined Fleet had previously ordered Nagumo to reserve half his planes for ship attack, to deal with such contingencies.[32] In the end, Combined Fleet didn't pass this crucial interception on to Nagumo.[33] One of Combined Fleet's staff officers later regretted it: "This is one of my big failures."[34] As it turned out, *Akagi* did not intercept the signal, thus depriving Nagumo of another chance of being forewarned. Similarly, there is a postwar claim that the carrier *Hiryū* intercepted the call sign of a U.S. carrier on the same night, but that too was not reported to senior officers.[35]

Transport Group Sighted and Attacked. One day before the planned air attack on Midway (3 June local), Tanaka's Transport Group was sighted and then attacked by planes from Midway. Combined Fleet headquarters certainly knew this. But the exposure of Tanaka's force was no surprise, for this had been expected when the Transport Group entered Midway's patrol range.[36]

As Kusaka later wrote in his book, Nagumo knew that at least Tanaka had been sighted at this time.[37] However, it was judged that Kidō Butai itself had not been sighted yet and that thus the morning attack on Midway could still achieve tactical surprise. Yoshioka's words best summarize the 1st Air Fleet Headquarters situation estimate right before the battle: "It was thought that the vague [i.e., still in the dark] enemy had not yet detected our intentions."[38]

Operation K. A plan to send long-range reconnaissance planes from the Marshalls over Pearl Harbor, known as Operation K, had to be canceled owing to the presence of American warships at the designated refueling point at French Frigate Shoals. It is generally accepted that this news was never passed on to Nagumo and that as a result the 1st Air Fleet staff, with no knowledge of the cancelation, assumed that silence on the matter meant that the reconnaissance operation had gone forward as planned and that the American carriers were where they had been assumed to be—still in port at Pearl Harbor. In the conventional view, the failure to pass along to Nagumo the news of Operation K's failure was crucial. Ironically, however, this turns out not to have been the case. According to *Senshi Sōsho,* the Japanese were convinced at this time that the absence of American carriers at Pearl would mean that they were still operating in the South Pacific. Likewise, if carriers were found at Pearl it would mean that surprise at Midway had been achieved. So either way, the cancelation of K caused little concern, as the Japanese were already predisposed to interpret any intelligence they gathered in the most optimistic light.[39] This, in turn, reveals a great deal about the staff inertia that seems to have been so prevalent during Operation Mɪ.

Submarine Picket Line. Finally, much has been made of the fact that by the time the intended line of picket submarines between Hawaii and Midway had been established the American carriers had already passed it on their way to Midway. The account in *Shattered Sword,* following David Bergamini's *Imperial Conspiracy* and Zenji Orita and Joseph Harrington's *I-Boat Captain,* relates how Prince Komatsu, commander of the 6th Fleet (submarine force), failed to inform Combined Fleet that his submarine cordon would be late in taking position, thus putting Yamamoto's and Nagumo's staffs at a disadvantage.[40] However, it has since been discovered that Combined Fleet in fact knew as early as 19 May that the submarines would be late in taking up their stations.[41] Nagumo almost certainly knew this too, as it was announced before his ships left port. It transpires that there was no real expectation that the submarines would provide sighting reports *prior* to the first air raid on Midway. The Japanese believed that no U.S. carriers would sail from Pearl until Midway was actually attacked, by which time the submarines would be in position to detect them.[42]

POOR INTELLIGENCE DROVE POOR ESTIMATES

The Japanese lost Midway mainly because of a disparity in intelligence. The fact was that prior to the battle the Americans not only had far superior intelligence but did a much better job of disseminating it to commanders. Conversely, it can be seen that the Japanese in general, and Nagumo in particular, went into battle with a very poor picture of what the Americans were up to. Admiral Yamamoto cannot be blamed for information he did not possess. However, his staff can and

should be blamed for poor decisions regarding disseminating the information it actually possessed.

Though arguably too complex, the MI plan for bringing the U.S. Navy's surviving carriers to battle was reasonable enough. However, very few plans can survive forewarning of the enemy. This is doubly true if one remains unaware of the disclosure and makes erroneous and optimistic projections as a result. If MI suffered from errors in execution, they center largely on the behavior of Yamamoto and Combined Fleet. After all, it was Yamamoto who knew that Tanaka's transports had encountered submarines on 30 May (making it quite possible surprise was forfeit). It was Yamamoto who knew that Operation K had been canceled but allowed the impression on board *Akagi* that nothing had gone amiss to remain unchanged. Finally, it was Yamamoto who had detected American carrier call signs a day before the battle and thus knew that the situation estimate regarding enemy carriers had become murkier (and more dangerous).

Nagumo's loss of strategic surprise simply cannot be overstated, as it allowed the Americans to utilize their reconnaissance assets very efficiently. Under normal circumstances, an island like Midway would be unable to maintain concerted long-range air searches of its surroundings—such searches consumed too much fuel and wore out planes and men too quickly. Indeed, sustained long-range patrols from Midway did not commence until 23 May, the day after the atoll had been positively identified by signals intelligence as the likely site of the Japanese attack.[43] The number of patrol planes needed to cover just 180 degrees out to six hundred nautical miles would be anywhere between fifty and seventy in all, and thirty needed to take off simultaneously at dawn.[44] Midway never had such numbers. However, because of code breaking Nimitz possessed not only the outline of Yamamoto's plan but the approximate approach course of Nagumo's carriers and their launch time. This allowed searches of unusual density and scope to be mounted from Midway as "N-day" neared. On board *Akagi,* though, the situation was almost the reverse. There was no expectation of U.S. carriers being present. It was assumed that any American response would take place after the attack on Midway began.

It has become fashionable recently to dispute or downplay the role of overconfidence (or "victory disease") in the defeat at Midway, but its impact remains quite discernible. Ironically, at Midway the Japanese came into battle with a degree of confidence that they *had not actually felt earlier* in the war. Indeed, in contrast to the sometimes pessimistic results of prewar exercises, the battle experience of Kidō Butai thus far had suggested that things generally went quite well—actual war had been easier than the war games.[45] Nagumo's force had never been hit before Midway, even when surprised by the British bombers off Ceylon. From what had been heard about Coral Sea prior to Nagumo's sailing, *Zuikaku* and

Shōkaku, less well trained than the four carriers at Midway, had come through their first carrier battle fairly easily. Thus, the impression in Kidō Butai was that confidence was warranted.

There is another kind of overconfidence, though, one that might be termed "specific suppositional overconfidence" about a particular part of the battle plan. In this case, the Japanese considered surprise an absolute given. Whatever intelligence came into Combined Fleet's hands, this suppositional tenet was never overturned—it was assumed that surprise would be achieved, no matter what. This had the insidious effect of thwarting any steps that might have been taken to ascertain whether or not the Japanese plan had been disclosed to the enemy and to warn Nagumo accordingly. In this context, the 30 May presumed submarine sighting of the Transport Group could actually have been a break for the Japanese. Had they just assumed from that point that surprise had been lost and specifically instructed Nagumo to that effect, many things might have gone differently.

In summation, the mind-set of 0520 on 4 June with respect to Nagumo's scouting at Midway hinged on the entrenched 1st Air Fleet estimate that surprise would be achieved. No enemy carriers were expected to be encountered on the morning of 4 June. Yoshioka's postwar claims to Mori are confirmed by the nature of Nagumo's scouting arrangements, which conformed to normal practice for situations in which the threat of enemy carriers was considered low. Though the Combined Fleet staff had information that might have served to revise these estimates, its members did not feel the need to communicate it to Nagumo. Had it been provided to the 1st Air Fleet—as it had been Kidō Butai practice up to that point in the war to do when opposition was expected—it seems certain that Nagumo would have deployed denser searches in response.[46] Thus, this entrenched threat estimate is the true culprit of Kidō Butai's unreadiness on 4 June. Indeed, as Yoshioka's deletion showed, it was held by the Japanese themselves, soon after the fact, to be the most egregious error of the 1st Air Fleet, one that had to be glossed over more than any other, to the point of excision from the record of the battle.

Yoshioka's admission explains many of the inconsistencies and puzzles of the Japanese side of the battle of Midway (many of them covered in *Shattered Sword*). To gloss over and obscure this damning omission, as well as the debacle of Nagumo's rearming orders, an alternative narrative to help explain the defeat was constructed. The puzzles and inconsistencies created by this alternative narrative—of the kind cover-ups always do create—generated further confusion and speculations. These range from suspicion that Nagumo ignored Yamamoto's reserve-strike-force arming order from the very outset to the proposition that Nagumo did not receive the sighting report from *Tone*'s floatplane No. 4 till 0800

or later (suggested by Isom).[47] None of these have found much support in either Japanese or English primary sources, modern works, or veterans' accounts. Once the purpose of the alternative narrative to obscure the true mind-set that morning of 4 June is understood, though, these speculations become unnecessary.

In retrospect, it can be seen how Nagumo's situation estimate led to his being caught badly off guard when *Yorktown*'s task force was sighted. The estimate trapped Nagumo in a complicated welter of "damned if you do, damned if you don't" decisions that have been well dissected. However, those decisions themselves were products of the bad hand that Nagumo dealt himself at the battle's opening when he and his staff failed, however understandably, to account for the possibility that their battle plan had been disclosed to the enemy.

NOTES

1. Mori Shirō, *Middowei Kaisen* [Naval Battle of Midway] (Tokyo: Shinchōsha, 2012).

2. Although Yoshioka's given name is the same kanji as Nagumo's (pronounced as Chūichi), the pronunciation is different. Hata Ikuhiko, *Nihon Rikukaigun Sōgō Jiten* [A Comprehensive Dictionary of the Japanese Army and Navy] (Tokyo: Tokyo Univ. Shuppankai, 1991), p. 245.

3. Mori, *Middowei Kaisen,* vol. 2, pp. 53–55, 422–25.

4. Ibid., p. 424.

5. Ibid.

6. Ibid., pp. 423–27.

7. *Senshi Sōsho,* vol. 43, *Middowei Kaisen* [Naval Battle of Midway] (Tokyo: Bōeichō Bōeikenshūsho Senshishitsu [hereafter BKS], 1971), pp. 251–52.

8. Kidō Butai Secret Operation Order No. 31, 19 March, *Hiryū* Detailed Action Report No. 9. (Japanese reports referenced in this article are from www.jacar.go.jp/ and are archived in Japanese Document Fleet Records, microfilm reel JD-9, Naval History and Heritage Command, Washington, D.C.)

9. For the sighting, *Senshi Sōsho,* vol. 26, *Ran'in Bengaru-wan Hōmen Kaigun Shinkō Sakusen* [Dutch East Indies and Bay of Bengal Naval Offensive Operations] (Tokyo: BKS, 1969), p. 642. Also, Destroyer Squadron [DesRon] 1 War Diary [hereafter WD], April 1942; Battleship Division 3 WD, April 1942.

10. Genda Minoru, *Kaigun Kōkūtai Shimatsuki* [Naval Aviation Units from Beginning to End] (Tokyo: Bungeishunjū, 1996), p. 102.

11. It is worth noting that two carriers of the Royal Navy's Eastern Fleet under Admiral Somerville came as close as 205 nm to Kidō Butai around 1726 local time on 5 April. Somerville was also planning a night torpedo attack. Nagumo didn't know.

12. The 7 May morning search was also substantially reinforced by land-, tender-, and cruiser-based aircraft. *Shōkaku* and *Zuikaku* Air Group Kōdōchōsho; *Senshi Sōsho,* vol. 49, *Nantō Hōmen Kaigun Sakusen (1)* [Southeast Area Naval Operations (1)] (Tokyo: BKS, 1971), pp. 271–74 and plate 3.

13. No long-range searches by carrier aircraft can be found in primary sources or published books. Cruiser Division 8 apparently launched floatplanes for reconnaissance on Wake, but no precise information is known. *Hiryū* and *Sōryū* Air Group Kōdōchōsho; *Senshi Sōsho,* vol. 38, *Chūbu Taiheiyō Hōmen Kaigun Sakusen (1)* [Central Pacific Area Naval Operations (1)] (Tokyo: BKS, 1970), pp. 201–203; *Senshi Sōsho,* vol. 10, *Hawai Sakusen* [Hawaii Operation] (Tokyo: BKS, 1967), pp. 436–38.

14. The Yokohama Air Group launched four flying boats to search between 340 and 50

degrees out to three hundred nautical miles from Roi Island on the 21st and four flying boats to search between 335 and 25 degrees to six hundred miles from Likiep Atoll on the 22nd. Yokohama Air Group Kōdōchōsho; *Senshi Sōsho,* vol. 38, table 2.

15. Two days before the attack, three two-plane, thirty-degree sectors were searched to sixty nautical miles by *Ryūjō.* One day before the attack, three two-plane, eighteen-degree sectors were searched to 250 nm, also by *Ryūjō.* On the day of attack, the floatplanes available on board the two screening cruisers, instead of being used for search, joined the attack force. Weather in this area was generally bad. *Ryūjō* and *Junyō* Air Group Kōdōchōsho; *Senshi Sōsho,* vol. 29, *Hokutō Hōmen Kaigun Sakusen* [Northeast Area Naval Operations] (Tokyo: BKS, 1969), pp. 245–46.

16. In the carrier raids of 1 and 24 February and 4 and 10 March, all available aircraft, except those reserved for combat air patrol or a second attack, were launched to attack. CINCPAC, "Report of Action, Marshall-Gilbert Islands Raids"; CTF-16, "Report on Raid on Wake Island, February 24, 1942"; CTF-11, "Report of Attack on Enemy Forces in Salamaua-Lae Area, March 10, 1942"; Office of Naval Intelligence, *Combat Narratives, Early Raids in the Pacific;* John B. Lundstrom, *The First Team: Pacific Naval Air Combat from Pearl Harbor to Midway* (Annapolis, Md.: Naval Institute Press, 1984), chaps. 4, 6, 7. (U.S. reports referenced in this article are available at www.fold3.com/.)

17. *Akagi, Kaga,* and *Zuikaku* were anchored at Truk on 1 February with 170 available aircraft. *Senshi Sōsho,* vol. 38, p. 405.

18. Richard W. Bates, *The Battle of Savo Island, August 9th, 1942: Strategical and Tactical Analysis, Part I* (Newport, R.I.: Naval War College, 1950), pp. 25–31, diagram B.

19. DesRon 2 WD, May 1942. Another message from the communication unit gave more details: "NERK [suspected to be submarine] detected at 23-30 N 169 E (12,795 kc) sent an urgent message to NQM [Midway] at 1130." CarDiv 5 WD, May 1942.

20. This submarine is probably USS *Cuttlefish.* It was on its way back from Saipan to the newly assigned position and sighted Japanese

planes at 26°18′ N 169°23′ E on 31 May. USS *Cuttlefish,* Report of Second War Patrol.

21. *Senshi Sōsho,* vol. 43, pp. 267–68.

22. "Last Moments of Transport *Kano Maru,*" compilation of *Kano Maru* WD. Given the time, call sign, and radio frequency, this radio interception is most likely the same one mentioned in note 19.

23. *Senshi Sōsho,* vol. 43, p. 267, puts this event on the 31st.

24. For example, about 1000 on 30 May, *Chitose*'s plane sighted an enemy submarine six thousand meters from the Transport Group and bombed it; "Last Moments of Transport *Kano Maru.*" Also see CarDiv 5 WD, May 1942; and *Senshi Sōsho,* vol. 43, pp. 244–47, 267–68.

25. To the authors' knowledge, there was no U.S. submarine near the Transport Group. So the sightings of submarines made by the Transport Group are probably mistaken. See Samuel E. Morison, *History of United States Naval Operations in World War II,* vol. 4, *Coral Sea, Midway and Submarine Actions* (Annapolis, Md.: Naval Institute Press, repr. 2010), pp. 198–214.

26. Ugaki Matome, *Fading Victory: The Diary of Admiral Matome Ugaki, 1941,* ed. Donald M. Goldstein (Annapolis, Md.: Naval Institute Press, 2008), p. 131.

27. Mori, *Middowei Kaisen,* vol. 1, pp. 251–53.

28. Ugaki, *Fading Victory,* p. 131.

29. *Senshi Sōsho* suggests that Nagumo probably received the report that an enemy submarine had been detected north-northeast of Midway, but this position is four days ahead of Tanaka, so it doesn't mean Tanaka had been sighted. *Senshi Sōsho,* vol. 43, p. 245.

30. Ibid., pp. 251–52.

31. Ibid., p. 126.

32. According to recollections of related officers, Kidō Butai's operational plan had it that Nagumo should reserve half his planes for the enemy fleet while attacking Midway. Ibid., pp. 164–65.

33. Ibid., pp. 249–50; Mori, *Middowei Kaisen,* vol. 1, pp. 308–10.

34. Mori, *Middowei Kaisen,* vol. 1, p. 310; *Senshi Sōsho,* vol. 43, p. 249.

35. Mori, *Middowei Kaisen,* vol. 1, pp. 306–308, 310–12.

36. *Senshi Sōsho,* vol. 43, p. 249.

37. Kusaka Ryūnosuke, *Rengō Kantai Sanbōchō no Kaisō* [Recollections of Combined Fleet Chief of Staff] (Tokyo: Kōwadō, 1979), p. 133.

38. *Senshi Sōsho,* vol. 43, pp. 251–52.

39. Ibid., pp. 126–27, 254–55.

40. See David Bergamini, *Japan's Imperial Conspiracy* (New York: William Morrow, 1971), and Zenji Orita, with Joseph Harrington, *I-Boat Captain: How Japan's Submarines Almost Defeated the U.S. Navy in the Pacific* (Canoga Park, Calif.: Major Books, 1976), pp. 66–71.

41. *Senshi Sōsho,* vol. 43, pp. 198–99; *Senshi Sōsho,* vol. 98, *Sensuikan Shi* [History of Submarines] (Tokyo: BKS, 1979), p. 143.

42. Kuroshima, staff officer of the Combined Fleet, admitted after the battle that it was his negligence that the message was not relayed to Nagumo; *Senshi Sōsho,* vol. 98, pp. 143–44.

43. Six-hundred-nautical-mile patrols from Midway began on 23 May. Patrol Squadron 44 did not arrive until 22 and 23 May. Long-range daily searches and B-17 operations from Midway put a serious burden on the naval air station's aviation fuel. Commanding Officer, MAG-22, "Report of Battle of Midway Islands"; Executive Officer, MAG-22, "The Battle of Midway"; both in Naval Air Station Midway WD, May and June 1942.

44. Assuming visibility of twenty-five nautical miles and a range of six hundred, one patrol plane can cover a sector of about six degrees without gaps. A range of six hundred miles or more was needed to give warning of any fast-approaching (twenty-five knot) enemy carrier force planning to launch an air strike at dawn, two hundred nautical miles from Midway.

45. In its war games of the Pearl Harbor attack and the proposed invasion of Ceylon, Japan suffered at least one carrier sunk and more damaged. Aircraft losses were heavy in both. For the war game on the Pearl Harbor attack, see *Senshi Sōsho,* vol. 10, pp. 101–104. For the game on Ceylon, see *Senshi Sōsho,* vol. 80, *Daihon'ei Kaigunbu Rengō Kantai (2)* [Naval General Staff and Combined Fleet (2)] (Tokyo: BKS, 1975), pp. 324–33.

46. Japan had extensive air-search plans for after Midway was captured. It was then that the Japanese expected a "decisive battle" against U.S. carriers and battleships. *Senshi Sōsho,* vol. 43, plate 1.

47. For that suspicion, Sawachi Hisae, *Kiroku Middowei Kaisen* [Recording Naval Battle of Midway] (Tokyo: Bungeishunjū, 1986), pp. 21–23. That Yamamoto's order was ignored does remain possible.

REVISITING THE NAVY'S MORAL COMPASS

Has Commanding Officer Conduct Improved?

Captain Jason A. Vogt, U.S. Navy

> *Nobody trusts or has confidence in leaders who believe they cannot be held accountable for what they do.*
>
> ADMIRAL JOHN C. HARVEY, JR., U.S. NAVY

T he U.S. Navy continues to suffer from poor decision making among a small number of commanding officers (COs), as demonstrated by continued headlines: "Squadron Commander Relieved of Duty after Alleged Drunk Driving Incident";[1] "Amphib [amphibious force] CO Fired, Source Says Linked to Alleged Bribery Scheme";[2] "Sub Commander Relieved of Duty after Woman Alleges He Faked Death to End Affair";[3] "Navy Investigates ex–Blue Angels Commander after Complaint He Allowed Sexual Harassment";[4] and "Navy Skipper Abdicated Command."[5] Since the publication in these pages in 2012 of Captain Mark F. Light's "The Navy's Moral Compass," individual cases of Navy commanding officers making poor decisions of such kinds have continued to trouble Navy leadership.[6] Considering that more than 2,350 Navy billets are designated as command positions, the infrequency of such events reflects the dedication of most commanding officers.[7] In fact, as Vice Admiral Thomas Copeman, addressing the specifics of a misconduct event as Commander, Naval Surface Force, U.S. Pacific Fleet, wrote in 2014, "In my experience [the violations] are beyond rare; they are . . . wholly unrepresentative of the supremely talented men and women filling positions of leadership."[8]

While it involves overall a statistically low percentage of commanding officers, continued misbehavior reinforces Captain Light's assessment that it is a potential integrity issue for the Navy. In the three years since the original article, substantial debate has occurred, and corrective actions have been taken by the Navy. Is it enough? Is it even

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moving in the right direction? This article reviews Captain Light's findings and updates his analysis with subsequent data; explains and assesses actions taken by Navy leadership since 2011 to improve the quality of commanding officers; and explores additional variables in today's debate on commanding officer behavior. Finally, the article presents recommendations to reduce future personal indiscretions by commanding officers.

THE MORAL COMPASS AND INSPECTOR GENERAL'S REPORT 2010

"The Navy's Moral Compass" reviewed and analyzed data provided by the Career Progression Division of the Naval Personnel Command (NPC) on CO "detachments for cause" (DFCs) from 1999 through 2010.[9] These data sorted firings into two broad categories (as resulting from professional or personal-conduct reasons), then broke down the latter by community (air, surface, submarine, etc.), rank, and duty type. Captain Light academically analyzed that material and concluded that the Navy had to accomplish three tasks to elevate the quality of the commanding officer corps and the character of naval leadership.[10]

First, Navy leadership had to establish a sense of urgency, not just to deal with issues quickly (and publicly, to maintain transparency), but also to effect change that would preclude unscrupulous actions in the first place. Second, he argued, the Navy needed to set an ethical and moral standard (preferably in writing, as the Army did in *Army: Profession of Arms* and the *Army Operating Concept* of 2010) to help create a shift in the Navy mind-set and culture as a whole.[11] Finally, the Navy had to improve the metrics, specifically the documentation, in periodic evaluations under the Bureau of Personnel's Fitness Report and Counseling Record, of potential moral shortcomings. Captain Light concluded with three recommendations, first that Navy leadership elevate the priority of ethical behavior, establishing a central database of reliefs of COs owing to personal or professional failures to facilitate tracking and analysis. Additionally, he urged them to undertake a campaign to set standards of integrity and honorable behavior. Lastly, he argued, the officer fitness report ought to be modified in format and concept to address character and integrity specifically.[12]

Concurrently with the original publication of "The Navy's Moral Compass," the Navy Inspector General (IG) released a study on reliefs of commanding officers for cause.[13] Focusing on firings between 1 January 2005 and 30 June 2010, the report determined the Navy's overall commanding officer DFC firing rate to be low—approximately 1 percent per year, with a small variance from year to year. It saw no correlation between CO DFCs and career paths, personality traits, accession sources, time in command, or year groups; however, it noted a preponderance of Navy-wide CO reliefs for personal misconduct.[14] In personal misconduct instances, it appears, fired COs either lacked the insight into their own motives

and weaknesses that might have prevented unacceptable behavior or felt they had the power to conceal the misconduct (the "Bathsheba Syndrome").[15] Furthermore, the study had found that implementation of four recommendations of a 2004 Navy Inspector General DFC study had had no discernible impact on the DFC rate (though the recommendations themselves were valid and represented a solid foundation for long-term reduction).[16] The 2010 report concluded with three further recommendations. The first was to establish an officer leadership training continuum from accession through major command, a continuum under a single "owner," to provide consistency in curriculum development and execution. Second, improved oversight by immediate superiors in command (ISICs) would better identify potential or ongoing issues earlier. Third, it recommended that the Navy enforce existing requirements for Command Climate Assessments and their executive summaries.[17]

ACTIONS AND REACTIONS

Whether in response to the two 2010 publications or, as a matter of coincidence, to continued (and sometimes very public) CO failures, Navy leadership began taking steps in early 2011 to address the trend. Admiral John C. Harvey, Jr., Commander, Fleet Forces Command, recognized that the majority of detachments for cause of COs during his tenure had been for personal misconduct, a fact that he confronted in a memorandum to his subordinates and through his official Navy blog.[18] This public acknowledgment was the first of several initiatives by senior Navy officials to instill more honor and integrity in the position of commanding officer.

The "Charge of Command"

By June 2011 Admiral Gary Roughead, then Chief of Naval Operations (CNO), distributed a "Charge of Command"—a memorandum notifying current and prospective commanding officers of his expectation that each of them would meet the highest standards of personal and professional conduct while in command.[19] Roughead's memo addressed three essential principles he, as CNO, considered to constitute the heart and soul of command: authority, responsibility, and accountability. His document tied these principles both to the tradition of naval command and to Title 10 of the U.S. Code, which speaks to the standards of conduct by individuals in command.[20] His successor, Admiral Jonathan W. Greenert, reissued and reinforced the Charge of Command, requiring serving and prospective commanding officers not only to review the memorandum but to sign it with their immediate superiors as a compact between Navy leadership and Navy commanders and commanding officers.[21] This step created not only a counseling opportunity and mentoring tool but also a contract between the Navy and its commanding officers regarding personal conduct.

The Command Qualification Program

Admiral Greenert further codified the process of setting standards and identifying future commanding officers by introducing a Command Qualification Program.[22] Released in June 2012 with an implementation deadline of 1 September 2012, the governing instruction plainly set out policy, procedures, and basic, minimum standards for the qualifying and screening of naval officers for command. Until then individual communities had determined for themselves how to go about selecting their future commanding officers. This autonomy had resulted in sometimes widely varying criteria. Now, for the first time, the Navy applied minimum standards across all officer "designators" (e.g., unrestricted line, Supply Corps) and required, among other things, that potential commanding officers be screened by an administrative board. In support of the Command Qualification Program, the Command Leadership School's Command Course, required for prospective commanding officers, instituted a written test covering tenets of leadership, duties and responsibilities of commanding officers, and authorities as laid down in U.S. Navy Regulations and the Uniform Code of Military Justice.[23]

Admiral Greenert further approved a Navy Leader Development Strategy, to promote leader character development, emphasize ethics, and reinforce the service's "core values." The strategy called for a career-long continuum to develop leaders and for a focus on character development to help young officers prepare for command.[24] The strategy led to the evolution of the Command Leadership School into the Naval Leadership and Ethics Center (NLEC).[25] Aligned with the Naval War College, in Newport, Rhode Island, NLEC now develops curriculum and performs assessment to instill the tenets of ethical leadership throughout the Navy; to develop and guide leaders with a strong sense of responsibility, authority, and accountability; and to impart commitment to the Navy's core values and ethos to sailors.[26] Vice Admiral Walter E. "Ted" Carter, Jr., now superintendent of the U.S. Naval Academy but at the time a rear admiral and President of the Naval War College, described the establishment of NLEC as "an opportunity to take a more proactive approach in improving a culture of character development in conjunction with continued command leader education" with a goal of "improved leader development."[27] With a consistent qualification program and a focus at NLEC on ethical and character expectations, clear standards and expectations are now set for current and future commanding officers.

Command Climate Assessments

Recent events have brought renewed rigor to the Defense and Navy Departments' Equal Opportunity programs, specifically regarding race, gender, and sexual orientation and addressing issues ranging from hazing to harassment, assault, and fraternization. One measure of the program's effectiveness is the Command Climate Assessment, a survey that should occur within ninety days after a new

CO assumes command, with annual follow-up assessments during the command tour.[28] The Navy's use of the Command Climate Assessment to support its equal opportunity program goes back many years, with little change in responsibilities defined for the ISIC and commanding officer.[29] Unfortunately, over the years many commands did not fully execute the program, typically using the results largely for "internal consumption" and not making a priority to forward results to ISICs. This resulted in inconsistent application of lessons learned. Two developments have refocused the Equal Opportunity program and renewed interest in the Command Climate Assessment: the repeal of "Don't Ask, Don't Tell" and increased scrutiny on the military's Sexual Assault Prevention & Response program. These issues have made the Command Climate Assessment a useful tool both within the unit and as a measure of that unit up the chain of command.

While the Command Climate Assessment cannot alone identify CO wrongdoing or personal misconduct, it can warn the ISIC to pay close attention to individual commanding officers who may need assistance, guidance, or stricter oversight. Such thoroughness by the ISIC would match the 2010 Navy Inspector General's recommendation that existing requirements for Command Climate Assessments be enforced.[30] Unfortunately, for a period after publication of the report there were no assessments at all; contractual issues with the company responsible for maintaining the servers involved prevented surveys for approximately six months in late 2012 and early 2013.[31] With the resumption of surveys has come renewed Navy leadership emphasis: commands now must use a "triangulation" method, utilizing multiple sources of information (e.g., the surveys themselves, records reviews, and focus groups, interviews, and observations by command assessment teams).[32] Renewed emphasis on ISIC involvement, to include follow-up reports on actions taken in response to assessments, should make the Command Climate Assessment a more useful tool in the future.

Reactions and Response

A consequence of the increasing importance of social media and "viral" networks is nearly immediate discussion of changes or potential changes in the way business is conducted. This was the case with the Charge of Command; feedback varied from strong support to outright aversion. The Association of the United States Navy was quick to announce support: "Admiral Gary Roughead's legacy to the nation will be an inspiration to the officers and leaders that will follow him."[33] Some blogs condemned the document, one calling the Charge of Command "a pathetic response to the real problem we have with COs being fired. Only a fonctionaire [*sic*] thinks that a bit of paper can substitute for solid leadership and a culture of honor and integrity—but that is the decision that has been made."[34] Military-interest publications such as *Navy Times* were quick to note each step to improve leadership, with requisite editorial comment. Meanwhile, each CO firing

has continued to be a "front page" headline. Websites like SailorBob.com, a U.S. Naval Institute–sponsored professional forum for Surface Warfare Officers, now offer informal environments where members can discuss and argue about the directions taken by Navy leadership, debate the conclusions of various studies, and dissect each firing event.[35] In this and other, similar forums hosted by naval warfare communities, virtual peer pressure offers an additional deterrent to misconduct while individual events and issues are deliberated. However, debate and opinion pieces do not sufficiently measure success. Continued analysis of commanding officer firings will be necessary to determine whether the adjustments that have been made are meaningful.
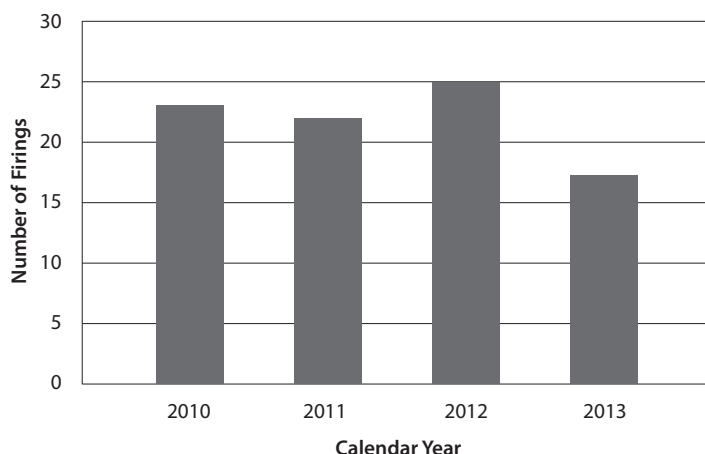
2011–2013 DATA AND TREND ANALYSIS

The intention for this article was to update Captain Light's data directly, by requesting DFC data for 2011 through 2013 from the source he used, the Career Progression Division of the Naval Personnel Command. However, owing to ongoing official investigations and the ever-increasing scrutiny of CO firings, the data were not forthcoming. But comparable statistics can be collected from other sources, including the Freedom of Information Act. Moreover, as the topic of COs being removed from command has high visibility, firing events have been documented by not only *Navy Times* but numerous websites, chat rooms, and blogs.[36]

However, because not all firings result in formal detachments for cause, these data would be likely to identify more firings than are officially documented by the Navy, to which Captain Light's work confined itself.[37] It being understood that this difference in data sources leaves room for challenge, this research attempted to maintain consistency by retaining previously determined definitions and by considering all firings as potential DFCs. A list of fired commanding officers published by *Navy Times,* the most public data for 2011–13, was used as the baseline.[38] A known disparity exists in data sets (for example, *Navy Times* reports seventeen firings for 2010, NPC three), but to lessen its impact the analysis focused less on statistical specifics than on apparent trends potentially linked to Navy actions.[39]

Figure 1 presents the total number of firings from 2010 through 2013. Firings occurring in 2010 were addressed in Captain Light's article; the 2010 data are provided here only as a starting point. This analysis focuses on firings occurring after the publication of the Charge of Command.

Using the definition of personal misconduct in the 2010 Inspector General report and previously established categories, removals were sorted by cause as "personal," "professional," or "unknown."[40] To make more specific the general caveats noted above, when NPC officially determines whether each removal in this
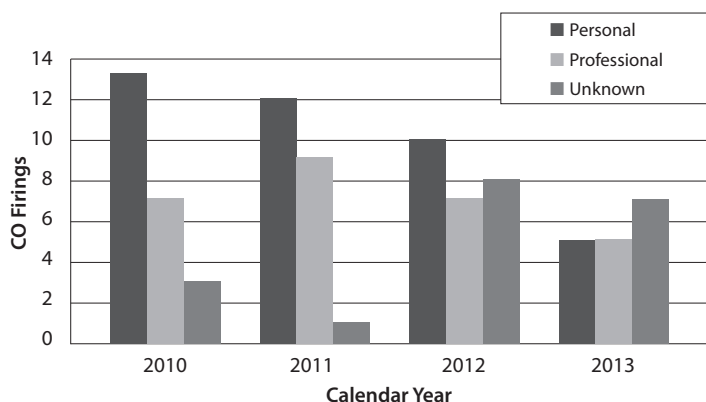
FIGURE 1
TOTAL COMMANDING OFFICERS FIRED

data set is a detachment for cause, several, those not found to be DFCs, may be removed. Additionally, when all now-pending Freedom of Information Act requests are resolved, a number will likely move from "unknown" to another category. Figure 2 breaks down firings for personal, professional, and un-known (or unpublished) reasons. It can be seen that the number of "unknowns" has increased in recent years. This is the result of a lack of detail provided in reasons for firing, often simply "loss of confidence [i.e., on the part of a superior] in ability to command." It might be assumed that many firings categorized as "unknown" for lack of published circumstances were actually for professional reasons, for which the "sensational" personal failings that might produce detailed media accounts would be absent. However, for this analysis, cases without those details remain "unknown."

Concentrating only on the firings for reasons identified as personal, the data trend downward from a high of thirteen in 2010 to only five in 2013. Six of the twelve firings during 2011 occurred after Admiral Roughead's Charge of Command memorandum was published. Three of the six firings occurred within a month of publication, leaving room for debate whether offending actions had occurred before the Charge of Command was circulated. Breaking the data down by community (figure 3) does not reveal any trends or patterns, presumably because of the decreasing number of cases. As both Captain Light and the IG report found, no trends or patterns are apparent

FIGURE 2
FIRING BY TYPE: PERSONAL, PROFESSIONAL, UNKNOWN

FIGURE 3
FIRINGS BY COMMUNITY (POST–CHARGE OF COMMAND) FOR PERSONAL REASONS

Aviation

Surface

Submarine

Other
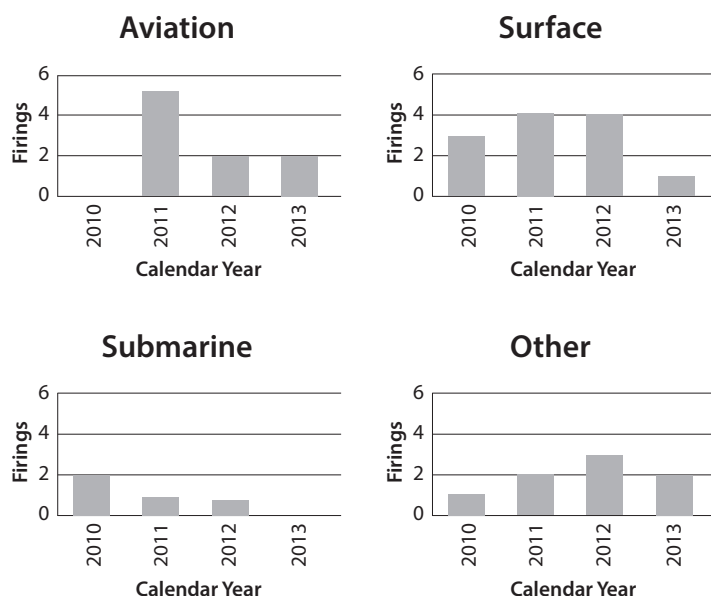
in occurrences after the Charge of Command with respect to rank of the individual or whether an operational (at-sea) or shore command is involved. In every case involving personal failings, the transgression (misconduct, inappropriate behavior, alcohol-related incident, etc.) was independent of professional requirements. Given the shrinking data set, therefore, it is necessary to investigate beyond community groups and explore individual cases for trends and linkages.

Since the Navy initiated steps to improve commanding officer accountability, the trend lines have appeared favorable in terms of the goal of reducing firings for personal misconduct. Though only a few years into the enterprise, the result is indicative of the effectiveness of giving prospective commanding officers the message regarding expectations of them while in command. Nevertheless, more than thirty Navy COs have been fired for personal misconduct since the Charge of Command was implemented. Why? This is a small number, considering the number of commands and commanding officers in the Navy, but the reasons why some individuals still do not "get it" merit further scrutiny.

Previous reports asserted that organizational culture plays no role in CO misconduct.[41] Both the 2004 and 2010 Inspector General reports found no discernible correlations between career paths, personality traits, accession sources, time in command, or year groups (i.e., year of commissioning).[42] However, in contrast to the shrinking overall number of firings per year and generally even distribution of firings across communities, one peak in recent data is worth noting as an outlier—the aviation electronic-warfare community, comprising Electronic Attack (VAQ) and Fleet Air Reconnaissance (VQ) squadrons. The VAQ and VQ subcommunities account for approximately 10 percent of the Navy's aviation squadrons.[43] Since implementation of the Charge of Command this subculture has been responsible for half the aviation COs fired for misconduct (five of ten),

17 percent of all misconduct CO reliefs between 2011 and 2013, and the first Navy CO fired for misconduct in 2014.[44]

This anomaly could exist for any number of reasons. Given the relatively short time and small numbers involved Navy-wide, it may simply be an unfortunate coincidence. Or there may be a cultural divergence that either was not present or went unrecognized during previous studies, some tendency that has developed out of the culture, training, and ethos of a group that is stationed, when not deployed, at one location (the Navy's VAQ subcommunity and the VQ squadron where a firing occurred during the period reviewed are both based at Naval Air Station Whidbey Island, in Washington). Or possibly this is a niche that simply has not had enough time pass to absorb the new standards for commanding officers into its system. On the basis of standard patterns of rotations and promotions, the department heads who in 2011 witnessed their commanding officers signing (among the first to do so) the Charge of Command have not yet returned to be COs themselves. To know absolutely that every year group of every community understands and executes the Charge of Command may take between four and seven years—a period the Navy is just now entering.

An instance that more obviously counters previous reports that organizational culture plays no role is that of the Blue Angels. Although the officer recently investigated for misconduct had already completed his tour in the squadron and was in a subsequent noncommand billet when his reassignment occurred, the causal events, described as his promoting a hostile work environment and tolerating sexual harassment, had occurred during his tenure as CO.[45] The investigation determined that while the CO was responsible, the organizational culture had devolved into something from a bygone era. Pornography, lewd comments, and raunchy pranks were widely condoned and tolerated, just "boys being boys," all under the direct observation of the commanding officer.[46] The inquiry resulted in not only the firing of the CO but a restructuring of the Blue Angels organization.[47]

Nevertheless, neither organizational culture nor rationalization by individual members can excuse actions that are clearly and plainly labeled inappropriate by the Navy. With the implementation of the Charge of Command, misconduct by a commanding officer comes down to a conscious decision. None of those fired were in any doubt about what was right and wrong, not only in terms of Navy regulations but also, in the vast majority of cases, according to law, a moral code, or both. Mechanisms are in place—training for prospective COs by the Naval Leadership and Ethics Center, the Command Qualification Program, the Charge of Command, clear statements of the expectations for commanding officers and their immediate superiors, and routine and standard Command Climate Assessments —to minimize commanding officer misconduct. But more can be done.

A TRUE, LONG-TERM, AND SUSTAINABLE SOLUTION

To have no commanding officers relieved for cause would not be an achievable goal; professional mishaps will occur that warrant holding a CO accountable. But it is not unrealistic to strive to eliminate reliefs due to misconduct or individual ethical failure. The positive actions described here are good first steps. But consistent enforcement of these topics and follow-up initiatives are necessary to avoid a long-term appearance that the Navy's response was simply reactive, a "Band-Aid," not a true, long-term, and sustainable solution. To continue to build on the gains already achieved, the following recommendations are offered.

Be Transparent and Consistent, Navy

When the Navy attempts to move forward, it often proves its own worst enemy. Two consecutive CNOs have placed the integrity of commanding officers high on their priority lists and set standards of performance. Yet the public assumption is that "Big Navy" has something to hide—because commanding officers are relieved without official statement about whether the reasons were professional or personal. The ubiquitous "loss of confidence" leaves much to the imagination, particularly in a social-media and blog environment where the allegation of hiding details results in overall loss of confidence in the broader establishment. This lack of transparency is compounded each time a firing is not publicly acknowledged or officially tracked because it did not fit an administrative criterion (i.e., the financial parameters of a formal detachment for cause).

The 2010 Inspector General report acknowledged several cases of commanding officers relieved early that it could have considered but did not because the DFC process had not been initiated.[48] The IG investigation had no reliable way to determine how often COs had been detached early but quietly, as if their tours had been successful, when a DFC might have been more appropriate.[49] Most conspicuously, in 2003 when a reported twenty-six commanding officers were relieved, only seven were listed by the Naval Personnel Command as DFCs.[50] The combination of potentially inconsistent Navy data with Navy Personnel Command unwillingness to release a comprehensive list makes evident a lack of transparency concerning CO misconduct.

The way to rise above what does or does not constitute a DFC is to call it what it is—a firing is a firing. Restricting official concern to reliefs that cost the Navy money will, in the long run, erode trust in the service and bring its integrity into question. The removal of commanding officers prior to projected rotation dates should be addressed by ISICs whether they occur for operational reasons or not.[51] If a "no-cost DFC" category is created, future studies will have a more comprehensive data set to analyze. The importance of dealing with all commanding officer firings was addressed in the 2004 IG report, though not in 2010. Such

a complete listing might challenge the analysis of this article, but thereafter there would be a consistent basis for future analysis, discussion, and debate.

Compounding the appearance of a lack of transparency was the Navy's acceptance of the unavailability of Command Assessments for six months. Contractual and budget issues were allowed to disable a leadership tool. The 2010 Inspector General's report had stated, "Command climate assessments would be a better tool for commands if there was a broader understanding throughout the fleet" of what assessments were and how to use them;[52] not using them at all depreciated them in the eyes of the fleet. Additionally, the IG had found that in almost all the CO detachments for cause correct use of the assessments, especially accurate executive summaries, would have highlighted early for ISICs the behavior and command-climate problems.[53] To have been denied the assessment process so soon after it had been identified as necessary was a mixed signal.

Progress toward transparency would also be achieved by a more thorough tracking system. In an age where baseball sabermetrics can track the actual (and even predict potential) performance of individual players in specific situations, the Navy ought to be able to track more closely the development of potential commanding officers and performance of current ones. Correlating data not only of firings but also leading to and during command tours—such as who had worked for whom over the years and what had been said by and about individuals in "360-degree" evaluations—might uncover linkages or trends not yet considered. No record now follows how subordinates of COs relieved for misconduct fare in future positions or suggests whether there is any correlation to their own future misconduct. While developing such a capability would be a herculean task, it would be within the mission of the Navy's Human Resources community, specifically its Core Competencies of management and development.[54] Until such analysis is established and employed, public speculation, suspicion, and scrutiny will continue.

Reexamine the Data

The Inspector General reports completed in 2004 and 2010 each took an objective look at the DFC process and came up with recommendations to address future commanding officer failings. For the reasons explained above, however, the picture the reports presented was incomplete. While it provided enough clarity for the CNO to determine that the Charge of Command, Command Qualification Program, and Command Climate Assessments were necessary, incompleteness of data may have the Navy chasing symptoms rather than a cure. It is time for another official Navy review of not just the DFC process but any and all removals of COs prior to their original rotation dates. A harder look at COs will produce a more complete understanding of the effectiveness of current and future initiatives to eliminate personal misconduct that results in firings.

Establish and Enforce Dissuasive (Monetary) Measures

Despite any amount of training, formal setting of personal and professional expectations, or examples of colleagues who are relieved for their own misconduct, the risks may not be high enough to deter those on the edge. When a commanding officer is relieved for individual failures, the topic quickly appears in articles, comment sections of periodicals, blogs, and chat rooms. In almost every case someone offers a variation on the statement "Commander X may no longer be the commanding officer, but he will still get to retire with his twenty years, receive his full pension, get a lucrative position outside the Navy, and other than some fleeting embarrassment he will receive no real punishment."

Command is the pinnacle of the military profession, and it is not a part-time job. It is not conducted only during business hours. As Admiral Roughead once said, commanders are duty bound to uphold strict behavioral standards, even when off duty.[55] Whether a commanding officer's misconduct is deliberate (driving under the influence of alcohol, bribery, fraternization, etc.) or results from failure to fulfill duties assigned or abdication of them (as occurred twice recently, with the Blue Angels and the guided-missile cruiser USS *Cowpens*), the commanding officer remains responsible.[56] As in other professions, a leader must be held accountable when performance results in failure. In most professions failure often results in removal of professional position and credentials, pecuniary penalties, or both. Doctors who do not perform adequately risk the loss of their licenses and punitive judgments for malpractice. Lawyers can be disbarred or sanctioned for demonstrated inability. Even midshipmen are held accountable for failure once midway through their training; they owe time in service or, if they cannot complete their training, must reimburse the Navy for the education received.[57] So what is the cost of the inability of a commanding officer to live up to the commitment he or she accepted by signing the Charge of Command? The Navy has often removed faltering leaders from authority but has not pursued financial compensation for the time, training, and trust invested in them.

It is time to debate the question. The Navy should create a postcommand screening board, charged with reviewing the details of individual firings. This board would be independent of the relieved individual's chain of command and unrelated to any pending action under the Uniform Code of Military Justice resulting from misconduct. This board should have the power to recoup bonuses from or impose other financial penalties on those who have made poor personal decisions while in command. This does not mean that every failed commanding officer would or should owe a financial debt to the Navy. For a purely professional failure, the balance might be restored by removal of the individual from the command; an objective review by this panel might find no further action necessary. But a personal failure, specifically misconduct, can be viewed as a breach of

contract, an inability of the individual to abide by the Charge of Command. Many commanding officer positions are designated as meriting additional pay or bonuses; the financial penalty could be simply requiring the failed commander to return them.[58] Bonuses received in command (e.g., training or specialty bonuses or flight, sea, nuclear, medical specialty, command-responsibility, or other critical-skills pay) could be considered insurance against poor decisions—refundable security deposits by the Navy. Each firing would have to be reviewed individually, as each commanding officer represents a different level of investment by the Navy in getting him or her to and through command. And just as the Navy holds a midshipman responsible for failing to complete the course of instruction leading to commission, so should the Navy hold responsible its commanding officers who fail to complete their command tours. For the more than 99 percent of commanding officers who live within the Charge of Command and successfully complete their command tours the hazard is nonexistent. Individuals considering accepting the risk of misconduct may find in financial penalties the necessary motivation to choose better—motivation that previous initiatives have not supplied. And even by preventing one firing, this option would take the Navy a step closer to eliminating misconduct among commanding officers.

Since publication of "The Navy's Moral Compass" the Navy has made progress to reduce commanding officer misconduct. Progress has been achieved not only by implementing new initiatives but also by ensuring that previously established guidelines are properly executed, resulting in a solid basis for further reducing commanding officer firings for misconduct in the future. Holding commanding officers to a consistent and higher standard is necessary if they are to achieve long-term success in the position, and until the number of misconduct cases is zero, the pressure must be sustained. The Navy must continue to strive for a high standard, improve transparency regarding its standards, continuously review data trends, and scrutinize those entrusted with command. And it must improve the process that identifies and tracks allegations when they arise—and then hold individuals accountable.

NOTES

1. "NAS Whidbey Squadron Commander Relieved of Duty after Alleged Drunk Driving Incident," *Whidbey News-Times,* 12 April 2011. Epigraph quoted in William H. McMichael, "Leadership Memo Cites *San Antonio* Fatality," *Navy Times,* 27 March 2011.

2. Tony Lombardo, "Amphib CO Fired, Source Says Linked to Alleged Bribery Scheme," *Navy Times,* 2 October 2013.

3. Karen Florin and Jennifer McDermott, "Sub Commander Relieved of Duty after Woman

Alleges He Faked Death to End Affair," *The Day: Connecticut,* 13 August 2012, theday .com/.

4. Craig Whitlock, "Navy Investigates ex–Blue Angels Commander after Complaint He Allowed Sexual Harassment," *Washington Post,* 23 April 2014.

5. Jeanette Steele, "Report: Navy Skipper Abdicated Command," *San Diego Union-Tribune,* 6 August 2014.

6. Mark F. Light, "The Navy's Moral Compass: Commanding Officers and Personal Misconduct," *Naval War College Review* 65, no. 3 (Summer 2012), pp. 136–52. Originally published as *The Navy's Moral Compass: Commanding Officers and Personal Misconduct,* Strategy Research Project (Carlisle Barracks, Pa.: U.S. Army War College, 26 March 2010).

7. U.S. Navy Dept., "MILPERSMAN 1301-800 CH-40: Command Policies and Procedures—Overview," in *Military Personnel Manual* (Washington, D.C.: 30 June 2012).

8. Vice Adm. Thomas Copeman, Commander, Naval Surface Force, U.S. Pacific Fleet, "Final Endorsement on Command Investigation into Ship's Readiness and Leadership ICO USS COWPENS (CG 63)" [redacted], San Diego, Calif., 11 July 2014.

9. Light, "Navy's Moral Compass."

10. Ibid.

11. See U.S. Army Dept., *The United States Army Operating Concept, 2016–2028,* TRADOC Pam 525-3-1 (Fort Monroe, Va.: Training and Doctrine Command, 19 August 2010), available at www.tradoc.army.mil/, and idem, *Army: Profession of Arms—the Profession after 10 Years of Persistent Conflict* (West Point, N.Y.: Center for the Army Profession and Ethic, October 2010), available at cape.army .mil/.

12. Light, "Navy's Moral Compass."

13. U.S. Navy Dept., *Commanding Officer Detach for Cause Study 2010* (Washington, D.C.: Navy Inspector General) [hereafter Naval IG 2010], executive summary.

14. Ibid. For the purposes of Naval IG 2010, "Personal Misconduct" included five subcategories: "Orders Violations," "Computer Pornography," "Falsifying Documents," "Adultery/ Inappropriate Relationships/Harassment/

Sexual Assault," and "Alcohol/DUI [driving under the influence of alcohol]" (executive summary).

15. Ibid., p. 15. For the biblical Bathsheba reference, see 2 Samuel 11–12. See also Dean C. Ludwig and Clinton O. Longenecker, "The Bathsheba Syndrome: The Ethical Failure of Successful Leaders," *Journal of Business Ethics* 12, no. 4 (April 1993).

16. Naval IG 2010, p. 20.

17. Ibid., pp. 20–21.

18. McMichael, "Leadership Memo Cites *San Antonio* Fatality"; Adm. J. C. Harvey, Jr., "USS PONCE (LPD 15) CO/XO Relief," *Archived U.S. Fleet Forces Command Blog (2009–2012),* 26 April 2011, usfleetforces.blogspot.com/.

19. Adm. G. Roughead, Chief of Naval Operations, "The Charge of Command," Memorandum for All Prospective Commanding Officers, 5370 ser. N00/100050, 9 June 2011, Washington, D.C., available at www.public .navy.mil/. See also Sam Fellman, "CNO Underlines Command Conduct Standards," *Navy Times,* 18 July 2011.

20. "All commanding officers and others in authority in the naval service are required to show in themselves a good example of virtue, honor, patriotism, and subordination; to be vigilant in inspecting the conduct of all persons who are placed under their command; to guard against and suppress all dissolute and immoral practices, and to correct, according to the laws and regulations of the Navy, all persons who are guilty of them; and to take all necessary and proper measures, under the laws, regulations, and customs of the naval service, to promote and safeguard the morale, the physical well-being, and the general welfare of the officers and enlisted persons under their command or charge." Requirement of Exemplary Conduct, 10 USC 5947.

21. Adm. Jonathan W. Greenert, Chief of Naval Operations, "The Charge of Command," Memorandum for All Prospective Commanding Officers, 5370 ser. N00/100107, 8 November 2011, Washington, D.C., available at www.public.navy.mil/.

22. U.S. Navy Dept., "Command Qualification Program," OPNAVINST 1412.14, Washington, D.C., 4 June 2012.

23. Ibid., p. 2.

24. Adm. Jonathan Greenert, Chief of Naval Operations, *Statement before the House Armed Services Committee on FY 2015 Department of the Navy Posture,* 113th Cong., 2nd sess., 12 March 2014, p. 30.

25. "New Center Imparts Ethical Command Leader Development," NNS140506-13, *America's Navy,* 6 May 2014, www.navy.mil/.

26. Ibid. For the Navy's core values and ethos, see *America's Navy,* www.navy.mil.

27. "New Center Imparts Ethical Command Leader Development."

28. U.S. Navy Dept., "Navy Equal Opportunity Policy," OPNAVINST 5354.1F CH-1, Washington, D.C., 20 September 2011.

29. Ibid., pp. 7–10.

30. Naval IG 2010.

31. "Questions and Answers Concerning DEOMI's Website and DEOCS Communications Outage," *U.S. Navy,* n.d., www.public .navy.mil/.

32. U.S. Navy Dept., Navy Personnel Command, "Guidance on Command Climate Assessments," NAVADMIN 336/13, Washington, D.C., 30 December 2013, available at www .public.navy.mil/.

33. Aaron Bresnahan, "The Charge of Command," *AUSN: Association of the United States Navy,* 1 September 2011, www.ausn.org/.

34. Commander Salamander, "Skipper, Come Sign Your Page 13," *Cdr Salamander* (blog), 20 July 2011, cdrsalamander.blogspot.com/.

35. *SailorBob 2.0: The Real SWO Gouge,* www .sailorbob.com.

36. There are several Internet locations where the Navy community has created opportunities online to discuss events or post opinions. Examples include *SailorBob 2.0: The Real SWO Gouge,* www.sailorbob.com; *Information Dissemination,* www.informationdissemination .net; *Cdr Salamander,* cdrsalamander.blogspot .com; *I Like the Cut of His Jib!!,* navycaptain -therealnavy.blogspot.com; and *The Stupid Shall Be Punished,* bubbleheads.blogspot.com.

37. As explained in "The Navy's Moral Compass," detachments for cause are administrative actions that release funding to move personnel subsequent to the removal for cause of naval officers from their current duty assignments;

DFCs may not be required if suitable officers are immediately available to relieve the officers who have been fired, and such instances may not be documented. See U.S. Navy Dept., "MILPERSMAN 1611-020 CH-18: Officer Detachment for Cause," in *Military Personnel Manual* (Washington, D.C.: 30 March 2007), sec. 1.

38. "Commanding Officer, XO and Senior Enlisted Firings," *Navy Times,* 5 February 2013.

39. "2010 Navy Commanding Officer Firings," *Navy Times,* 15 December 2010.

40. Naval IG 2010.

41. Light, "Navy's Moral Compass."

42. Naval IG 2010.

43. "Owners and Operators," *All Hands: For Sailors by Sailors,* [2014], www.navy.mil/.

44. Janis Reid, "NAS Whidbey Squadron Commanding Officer Fired for Racism, Other Misdeeds," *Whidbey News-Times,* 13 January 2014; "Whidbey Commander Relieved," *Whidbey News-Times,* 28 February 2012; Sam Fellman, "Report: Fling in Italy Sank Flagship CO's Career," *Navy Times,* 13 January 2014; "NAS Whidbey Squadron Commander Relieved of Duty"; "Growler Squadron CO Fired on Deployment," *Navy Times,* 19 July 2011.

45. Whitlock, "Navy Investigates ex–Blue Angels Commander"; Meghann Myers, "Report: Blue Angels Boss Tolerated Porn, Lewdness," *Navy Times,* 3 June 2014.

46. Meghann Myers, "Blue Angels Report Calls Out Fighter Pilot Culture," *Navy Times,* 25 June 2014.

47. Mark Faram and Meghann Myers, "Blue Angels Add XO, Screening after Misconduct Report," *Navy Times,* 22 July 2014.

48. Naval IG 2010.

49. Ibid., p. 16.

50. Craig Whitlock, "Navy Has Spike in Commanding-Officer Firings," *Washington Post,* 17 June 2011; U.S. Navy Dept., *Commanding Officer Detach for Cause Study 2004* (Washington, D.C.: Navy Inspector General, 15 November 2004), executive summary; Light, "Navy's Moral Compass."

51. Changes of command may occur before the incumbent's projected rotation date for such reasons as changing operational

commitments or to accommodate an officer's career requirements and improve promotion eligibility. Such events should be well documented by the ISIC.

52. Naval IG 2010, p. 19.

53. Ibid.

54. "Navy Personnel Command, Human Resources Officer Homepage," *U.S. Navy,* www .public.navy.mil/.

55. Whitlock, "Navy Has Spike in Commanding-Officer Firings."

56. Copeman, "Final Endorsement on Command Investigation . . . ICO USS COWPENS (CG 63)"; Adm. Harry B. Harris, Jr., Commander, U.S. Pacific Fleet, "Final Endorsement on Command Investigation into the Facts and Circumstances Surrounding Possible Violations of the Department of the Navy Policies on Equal Opportunity and Sexual Harassment by the Former Commanding Officer of the U.S. Navy Flight Demonstration Squadron between July 2010 and November 2012" [redacted], Pearl Harbor, Hawaii, 16 May 2014.

57. Tony Spiker, "Naval Academy Class of 2015 Commits to Five Years of Military Service," NNS130829-02, *America's Navy,* 29 August 2013, www.navy.mil/.

58. U.S. Navy Dept., "MILPERSMAN 7220-100 CH-25: Command Responsibility Pay," *Military Personnel Manual* (Washington, D.C.: 2 December 2008).

COMMENTARY

WANTED   U.S. NAVY MINE WARFARE CHAMPION

Scott C. Truver

Successfully implementing innovation within a bureaucracy ultimately requires a champion to navigate the inherently political processes of securing sponsorship and resourcing. This is just as important to the very small as to the very large programs, particularly during periods of fiscal austerity. "It's fragmented," commented retired rear admiral Paul Ryan, former commander of the U.S. Navy's Mine Warfare Command, in April 2014. "There is no single champion for mine warfare."[1]

This lack of support presents challenges for the U.S. Navy and the nation, as the service struggles to articulate, and to muster the necessary backing for, mine warfare (MIW) strategies, programs, capabilities, and capacities. The task of confronting these challenges is complicated by the fact that MIW comprises not only mine-countermeasures (MCM—that is, minesweeping and mine hunting) systems and platforms but also mines that can be employed to defeat our adversaries' naval strategies and forces. In recent decades, the counters to our adversaries' mines have received increasing attention, leading to the advanced MCM mission package fitted on the littoral combat ship (LCS). Yet at the same time, our mines and offensive and defensive mining capabilities have languished to the point of irrelevance. If MCM is the neglected program of "Big Navy," then mines are the misbegotten offspring of the MIW community. However, that might be changing, albeit ever so slightly.

The post–World War II political history of U.S. Navy mine warfare (defining "politics" as who gets

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what, when, where, and how) is fraught with insufficiently sustained and stable commitment, relatively long periods of benign neglect, indifference, uncertainty, and inadequate funding, punctuated by relatively short bursts of grave concern and avid support, usually directly related to some recently experienced MIW embarrassment. Political scientist Harvey Sapolski at the Massachusetts Institute of Technology explains in his book *The Polaris System Development* the inherently and necessarily political process by which a government program can achieve high priorities and guarantee resources for research-and-development (R&D), programmatic, and operational success. "The success of the [Polaris fleet-ballistic-missile, or FBM, submarine] program was dependent upon the great skill of its proponents in bureaucratic politics," he writes. "Without their quick recognition of the political nature of decisions determining the procurement of weapons, I do not believe that sufficient resources could have been assembled to create the . . . FBM Fleet."[2]

There is perhaps only one other U.S. Navy program that has had R&D, bureaucratic, programmatic, and operational success similar to that of the Polaris FBM project, and that is the Aegis antiair warfare system, deployed in the *Ticonderoga* and *Arleigh Burke* surface warships. Looking at Polaris and Aegis, some secrets of naval-warfare bureaucratic-political success can be gleaned for the future U.S. MIW community, despite the great differences in size, cost, and scope of the programs.

SAPOLSKI'S SECRETS OF SUCCESS

First, Polaris and Aegis had a set of well-defined goals that stayed constant.[3] The Special Projects Office focused on building a solid-fuel, submarine-launched ballistic missile and a fleet of nuclear-powered, ballistic-missile-launching submarines to enhance U.S. strategic deterrence. The Aegis Shipbuilding Program (PMS 400) had the goal of building a fleet of antiair-warfare surface warships armed with advanced phased-array radars and surface-to-air (and space) missiles capable of defeating massed Soviet naval aviation raids. Therefore, since 2002 Aegis ballistic missile defense (BMD) has pushed the envelope, achieving twenty-eight intercepts in thirty-four flight-test attempts through 2013, a rate unprecedented in any element of the nation's BMD systems.

Second, both Polaris and Aegis were born and sustained in favorable environments. For Polaris, it was the demand pull for a survivable nuclear deterrent within a strategic context of mutually assured destruction and bitter U.S.-Soviet rivalry, as well as a budgetary context of resources that were virtually unlimited (particularly by today's standards), often reallocated from less well protected programs. Aegis was conceived when the Soviet navy began to break out of its historical boundaries, challenging the U.S. Navy everywhere and holding at risk aircraft

carrier battle groups with increasingly capable antiship cruise missiles launched from aircraft, surface ships, and submarines. "Aegis . . . don't leave home port without it" was the program office's unique selling point—and it worked! This has continued with Aegis BMD, extending the shield well beyond forces at sea.

Third, both the Polaris and Aegis programs also depended for success on their proponents' ability to promote and protect them. Competitors had to be eliminated; reviewing agencies had to be outmaneuvered; defense and Navy officials, admirals, congressmen, defense industry, the media, and academicians had to be co-opted. Every opportunity to promote and protect Polaris and Aegis had to be seized and won, whether the challenge came from the Office of the Secretary of Defense, another service, Congress, or the Navy.

Finally, both had to have long-term champions skilled in bureaucratic politics and possessed of great managerial strength in dealing with technological complexity. Both Polaris and Aegis were "rocket science," and both needed leaders with broad and deep technical, engineering, and program-management expertise. Admirals Levering Smith, William F. Raborn, and the man who is widely regarded as the "Father of Aegis," Admiral Wayne E. Meyer, were all masters in these areas. Also, Admiral H. G. Rickover was instrumental in the development of nuclear power, and it did not hurt that Admiral Arleigh Burke, Chief of Naval Operations (CNO), personally established the Polaris Special Projects Office.

U.S. Navy MIW Challenges

Compare the Polaris/Aegis political-culture experience with MIW since 1945. Instead of a single set of well-defined goals that stay constant, MIW goals and program elements often compete among themselves for priorities and resources, and they are far from stable, particularly in terms of funding for research and development, acquisition, and sustainment.

- Should we emphasize mine countermeasures at the expense of offensive or defensive mines and mining?

- Within the MCM arena, what is the best way to allocate scarce resources between mine hunting and minesweeping, and what element of the MCM "triad"—airborne, surface, and explosive ordnance disposal (EOD)—needs to be supported most urgently?

- How can Big Navy be convinced to acquire and sustain a modern offensive and defensive mining capability?

This situation is made more complex by the fact that, except in rare cases, the MIW community does not procure its own major platforms and so can be held hostage by the competing goals, priorities, and dynamics of other warfare sponsors. Witness the challenges of keeping the heavy-lift Sea Dragon MH-53E

airborne MCM helicopters ready for tasking, as they continue to be "sundowned," replaced by the medium-lift MH-60S helicopter, particularly as the naval aviation enterprise focuses on next-generation aircraft carriers and aircraft. Likewise, challenges to the littoral combat ship could jeopardize mine-countermeasures modernization as the *Avenger* surface MCM vessels are stricken from the Navy list. Indeed, the Navy surface MCM community is "betting the farm" on the research-and-development, bureaucratic, programmatic, and operational success of the LCS program, however modified as a result of the recommendations of the CNO's Small Surface Combatant Task Force in 2014.

When the Navy reorganized the LCS Program Executive Office out of the previous Program Executive Officer (PEO) Littoral and Mine Warfare in 2011, the programs of the MIW manager (known with the Naval Sea Systems Command as PMS 495) and other MIW-related legacy "cats and dogs" were included in the new PEO's "portfolio." This reorganization has taken some time to sort out.

Moreover, when U.S. Navy MIW receives emphasis, it tends to be in nonfavorable environments and in knee-jerk reaction to embarrassment and to an urgent, ultimately ephemeral, perception of need. Two quotes illustrate this:[4]

- "When you can't go where you want to, when you want to, you haven't got command of the sea. And command of the sea is the rock-bottom foundation for all our war plans. We've been plenty submarine and air conscious. Now we're going to start getting mine conscious—beginning last week."

- "I believe there are some fundamentals about MIW that we should not forget. Once mines are laid, they are quite difficult to get rid of. That is not likely to change. It is probably going to get worse, because mines are going to become more sophisticated."

The first quote belongs to Admiral Forrest Sherman, speaking as CNO in late October 1950. He is lamenting the fact that in a four-hundred-square-mile area off Wonsan, North Korea, an extensive minefield, a mix of some three thousand Soviet 1904- and 1908-vintage moored mines and more modern magnetic-influence bottom mines, had been keeping a 250-ship amphibious task force at bay. The operational plan had allocated only ten days and insufficient MCM vessels to clear several channels, intelligence on the mine threat was all but absent, and maps and charts of the area were inadequate. Ultimately, only 225 of the three thousand mines were swept, and the North Koreans (and Russians) had another thousand mines in reserve.

In the second quote, Admiral Frank B. Kelso, CNO, is reacting in October 1991 (quoted in the Navy's 1992 Mine Warfare Plan) to the more than 1,300 mines that had frustrated planned Marine assaults against Iraqi forces in Operation DESERT STORM. A few of the mines were of a 1908 vintage and a crude Iraqi design, but

others were modern Soviet and Italian multiple-influence weapons, including at least two hundred of a multiple-acoustic type that had never been seen before in the West. The operational plans had allocated only a few days to clear assault lanes, and intelligence on the mine threat was all but absent. Maps and charts of the northern Arabian Gulf were inadequate. Our intelligence about the Iraqi mine threat was so incomplete that two U.S. warships suffered mine strikes in areas that analysts had assessed to be mine-free. The helicopter assault ship *Tripoli* and the Aegis guided-missile cruiser *Princeton* were damaged severely; *Princeton* was taken out of the war by a single fifteen-thousand-dollar weapon.

Our adversaries' mines and mining superiority revealed by Wonsan and DESERT STORM had the near-instantaneous effect of revitalizing our MCM—though not our mines. There was not only an infusion of much-needed funding but also a new understanding that somehow MCM was still important to the Navy during a period of great change.

But the threat of global strategic-nuclear war in the 1950s and the uncertainty of the post–Cold War era in the 1990s, respectively, were short-lived, and by the early 1960s and late 1990s "business as usual" was the unofficial MIW motto, as resources became increasingly tight and attention turned to other needs. Since the last new-design mines reached the U.S. operating forces in 1983, and despite interest in "littoral sea mines" since then, only an upgraded target detection device (TDD) has seen the light of day.

Two Other Factors

The two additional factors of success that Polaris and Aegis enjoyed were the ability of their proponents, long-term champions skilled in bureaucratic politics, to promote and protect their programs against all others inside and outside the Navy. This has been absent in the MIW community. Rarely has a CNO put MIW on the line and protected the program of record from those who had different priorities. Recently two CNOs, Admirals Vern Clark and Jonathan Greenert, "talked the talk" *and* "walked the walk" for MIW, earning them the title of "Mine Warfare CNO." However, the reality is that only one CNO since 1945, Admiral Mike Boorda, who had been commanding officer of the minesweeper *Parrott* (1966–68), has had an actual tour in MIW. Others might point to Admiral Robert Carney, who had at least one MIW experience, as commanding officer of the light cruiser *Denver*.

During his stint as Secretary of Defense William Cohen's senior military adviser in the late 1990s, General James Jones, USMC, asked me, "What do we have to do, to keep the Navy's attention focused on mine warfare?" I replied, "Ships got to sink and people have to die, or it will be business as usual." He replied, "Sadly, I agree."

In a way, Big Navy's indifference, if not hostility, to investment in MCM is not without merit. Looking objectively at mine-hunting technology versus advanced mine technology, the Navy cannot have any real confidence that a quick and effective in-stride mine-clearing capability in a nonbenign environment will ever be achieved. Post–DESERT STORM, the world's best MCM capabilities were for the most part pitted against relatively ancient mines. The clearance rate was painstakingly slow and could be achieved only in a totally benign environment. Following the end of DESERT STORM hostilities, an international MCM force needed some two years to declare Persian Gulf sea-lanes and ten mine-danger areas to be mine-free.

More important is the reality that if we cannot effectively and quickly detect, classify, localize, identify, and neutralize mines, neither can our adversaries. If their mines will have major antiaccess/area-denial (A2/AD) impacts on U.S. naval strategies and operations, the U.S. Navy's offensive mines should have the same effect on their strategies and operations. Thus, the Navy should be investing heavily in a state-of-the-art mining capability for use against potential adversaries that rely in a major way on the sea.

A CASE STUDY: MINES AND MINING

Although mine hunting/sweeping and offensive/defensive minelaying are two sides of the same naval warfare coin, they are indeed very different functions, with very different prospects for success. The seemingly enduring offense/defense imbalance in this warfare area, an imbalance that so heavily favors the mine, should stimulate U.S. Navy investment in the "winning" side: offensive mining. While in 2014 there are indications that Navy "weapons that wait" are receiving greater attention among the operating forces and Navy leaders, particularly as a result of the "Pacific pivot" and the need to address potential adversaries' capabilities, since the mid-1980s Navy mines and mining have represented an even more dismal story than MCM.[5]

During the Cold War, the U.S. Navy maintained a large stock of mines for both offense and defense. Several types of bottom and moored antisubmarine mines (Mark 52/55/56/57) deployed by submarines and aircraft entered service in the 1950s and 1960s. Mine inventories included general-purpose bombs fitted with mines, known as Destructors, which saw widespread employment at sea and on land during the Vietnam War. But with the end of the Cold War, the U.S. Navy's mine capabilities began to atrophy. No conventional mines remain, and at one point the Navy had programmed the remaining obsolescent submarine-launched mobile mines (SLMMs) to be phased out in 2012. Had that been carried out, U.S. attack submarines would have had no mining capability at all; as it was, only direct intercession by the CNO, Admiral Greenert, saved a handful of SLMMs.

The only other mines in service are the Quickstrike series of aircraft-deployed weapons (essentially upgrades of the 1960s Destructor mines); the dedicated, thin-wall Mark 65 two-thousand-three-hundred-pound bottom mine (in service since 1983); and the Mark 62 five-hundred-pound and Mark 63 one-thousand-pound bottom mines (1980). Like the Destructor series, these last two are general-purpose bomb-conversion weapons, using screw-in multiple-influence (magnetic, pressure, and seismic sensors) TDDs in place of the bombs' conventional fuses.

There are no surface minelaying capabilities in the U.S. Navy.[6] While packages for mission sets beyond the baseline of MCM, surface warfare, and antisubmarine warfare (ASW) have been suggested for the littoral combat ship, there is no apparent interest in configuring LCS variants as minelayers. Likewise, in early winter 2014 there is little indication that the results of the 2014 Small Surface Combatant Task Force will include minelaying for a next-generation, "frigate-like," small warship.

With the eventual demise of the Mark 67 SLMM, the nation's sole minelaying capabilities will reside in naval aviation and the U.S. Air Force. The U.S. Navy's P-3C Orion maritime patrol aircraft and F/A-18 Hornet / Super Hornet can drop Quickstrike mines, but the P-3Cs are leaving service. They are to be replaced by the P-8 Poseidon Multi-Mission Maritime Aircraft, which will also have a mining capability, but its ability to lay mines in meaningful numbers is years away.

The Air Force B-52H Stratofortress, B-1B Lancer, and B-2A Spirit strategic bombers constitute the nation's only high-volume mining capability. B-1s can carry more Quickstrike mines than the seemingly ageless B-52s (expected to remain active through 2040, the first B-52H having entered service in 1961), and B-52s and B-1s (but not B-2s) regularly train for and practice this mission. The seventy-seven active B-52Hs can each carry about forty-five Mark 62 Quickstrike or eighteen Mark 63 mines or ten Mark 65s; the sixty-six B-1s can carry eighty-four Mark 62, or twenty-four Mark 63 (although the Mark 63s are not yet certified), or eight Mark 65 mines; and the twenty B-2s could carry eighty Mark 62s each. However, the availability of bombers, airborne tankers, and defensive escorts for mining campaigns is uncertain. There will certainly be intense competition for these scarce resources in future crises and conflicts.

In short, at the time of writing the United States lacks modern mines and the means to deliver them. The Navy has no surface-deployed mines. A handful of obsolescent SLMMs—with perhaps less-than-optimum reliability, accuracy, and standoff characteristics—constitute the Navy's only clandestine mining capability. The air-launched Quickstrikes have less-than-optimal accuracy and are best deployed in less-than-contested environments. The 1991 Gulf War was the last time that the Navy deployed mines in combat. (On that occasion, four A-6

Intruder bombers planted a tactical minefield of Quickstrikes at the mouth of the Khawr az-Zubayr River to deny Iraqi access to the northern Gulf; one aircraft was lost to ground fire. Although there was little evidence that the minefield was successful, the Navy used the Quickstrikes also against bridges and airport runways, to better effect.)[7] Thus the nation's only offensive mining capability is resident in a small number of SLMMs and our only defensive mines are the shallow-water Quickstrikes.

Of greater long-term concern, there are only a few uniformed and civilian mine specialists, and a dwindling mine technological/industrial base has already presented challenges. For example, the U.S. Navy has been developing the next-generation, multiple-influence, programmable Mark 71 Quickstrike TDD since 1991. Only since 2012 has the system been acquired, and work is already under way to develop "smarter" algorithms for a broader target set. The Navy's mines/mining community has long wanted the ability to command and control deployed mines remotely but has not received the R&D funding to support it.

At the direction of Admiral Greenert, in 2012, the Navy conducted an "analysis of alternatives" (AoA) for near- and far-term mining capabilities that would address shortfalls and gaps. This included assessments of foreign mines, as well as American weapons. As of 2014, the AoA has yet to be released, and its potential impact on the mine warfare program of record is unclear. Nevertheless, low-level research and development for "advanced undersea weapon systems" has continued at the Office of Naval Research and the Naval Surface Warfare Command, in Panama City, Florida.[8] With today's unmanned-precision-vehicle and underwater communication technologies, the mining vision has significantly been expanded to make it more tactically responsive to changing situations, to provide much greater reach and utility in all phases of operations, including A2/AD missions.

IRONY AND PARADOX
The great irony and paradox for the Navy lie in the fact that mines do work and that mines/mining and MCM will almost certainly be needed in a future crisis or conflict. The post–World War II operational history underscores this fact of naval life. Of the twenty U.S. Navy ships that have been severely damaged or sunk by adversary action since September 1945, fifteen were mine victims. When the Navy employed mines in Haiphong in 1972, they were effective operationally and politically. More to the point of mines and mining in Navy strategies and operations is that in various fleet exercises during the past decade, senior flag officers have been increasingly concerned that they could not carry out operation plans because of a lack of modern mines and platforms. During international MCM exercises in the Persian Gulf in 2012 through 2014 stimulated by Iran's "mine

rattling" threats to close the Strait of Hormuz, numerous U.S. and foreign navy surface and airborne MCM and EOD forces tested capabilities against threats, a process that helped identify both weaknesses and strengths.

Yet during the Cold War and post–Cold War periods the MIW community has been subjected to a near-constant roller coaster of long periods of neglect alternating with short but intense "get well" efforts. Only since 2003 or so has this sinusoidal pattern been short-circuited, generating a "minirenaissance" in MIW—primarily MCM, but there is also a growing optimism for mines and mining. Unlike the history of the previous fifty years, there was no apparent mine embarrassment in the early 2000s that generated sufficient support to get MIW funding up to levels where it started to make a difference. When asked, during an interview with me, to explain this relatively robust support, Admiral Clark replied succinctly, "Because it's the right thing to do."

Captain Glenn R. Allen, then the CNO's MIW resource sponsor (N952), offered this insight during an April 2014 conversation: "The program of record requirements when written were visionary, but the technology has yet to advance to the required level to achieve them even twenty years later, largely due to funding uncertainties. Unfortunately, the acquisition process and limited budget do not allow the MIW programs to seize on those technologies that almost meet the requirements and get them in the fleet along the way to full operational capability."

While that might be the case for MCM, the Navy's mining programs have also severely atrophied. In 1993, during the first of several post–Cold War reorganizations, the Navy established the office of the Director, Expeditionary Warfare (N85/N75/N95), headed by a Marine Corps major general with a Navy one-star deputy. The intent was to focus expeditionary warfare resource sponsor attention on several crucial ". . . from the sea" warfare areas. The reality has been "director churn," with average tenures less than twenty-three months (separated at times by gaps), too short to have impacts that survive the next rounds of cuts once new people are on board. To be fair, this seems to be business as usual throughout Navy headquarters. But given a succession of non-MIW-experienced commanders and deputies at the Naval Mine and Anti-Submarine Warfare Command (NMAWC) in San Diego, California, the demise of the Navy one-star deputy billet, and a chronically small share of budget, it may be difficult to establish mine-warfare focus, traction, and consistency, let alone sustain them.

POSSIBLE FRUSTRATIONS

This situation cries out for a high-level champion who is willing to drive research and development, acquisition, the development of employment concepts, incorporation into operational plans, and fleet training and exercises. Several impediments conspire to frustrate this process.[9]

First, champions cannot be lone voices in the wilderness. Rather, they must be catalysts who mobilize the believing masses who are looking for a leader. In other words, there must be bodies of believers out there who agree with the champions and are ready to follow and take positive action.

There does not appear to be any process or forum that exposes the vast body of naval officers today to the high-end challenges of mine war fighting, to produce either the body of true believers or the champion. There is no requirement that naval officers know much if anything about mine warfare. At the Naval Academy and in the Naval Reserve Officers Training Corps, the handbook introducing midshipmen to the Navy's warfare communities has only a page on mine warfare; an informal and unscientific survey of Naval Academy midshipmen (classes 2008–14) could not identify a summer cruise anyone had taken on an MCM vessel. At the Naval War College, mine warfare is covered in a single class session at the junior level, but there is not even that at the senior level. (That said, in recent years considerable attention has been given to mine warfare by the Halsey groups, at a classified level, perhaps responding to Admiral Greenert's interest in mines as well as MCM.) Thus, the bulk of the Navy's officer corps not only is not exposed to the demands of mining and countermining but is given the clear message that in preparation for war, knowledge of mining is not important.

There is a single exception to the lack of mine-warfare Joint Professional Military Education. As an element of its response to the Desert Storm MCM debacle, the Navy in 1996 stood up the Chair of Expeditionary and Mine Warfare and an assistant directorship of the Undersea Warfare Research Center at the Naval Postgraduate School (NPS), in Monterey, California. The goal was to enhance the academic and research content and establish the NPS as a major center of excellence for mine and undersea warfare research, analysis, and education. There have been some successes in these areas. During the past eighteen years about a thousand young officers have attended a quarter-long course on Navy MIW history, completed MIW projects, submitted theses, attended related symposia, and visited laboratories and uniformed and civilian leaders. While not all have subsequently gone on to MIW assignments, their solid understanding of the subject stands in stark contrast to the usual approach to MIW education.

SAPOLSKI'S LESSONS TO BE (RE)LEARNED

Although U.S. Navy MIW does not benefit from being either large, or, sadly, adequately funded, there is a short list of Polaris and Aegis lessons learned for MIW. Mine countermeasures are among them, to be sure, but also greater interest in mines and offensive mining.

- Articulate clearly the Navy's mining and MCM visions and establish a set of well-defined requirements, goals, and programs that stay constant for more than a couple of budget cycles.

- Take advantage of defense strategic reviews and the resurrection and refreshment of the triservice cooperative maritime strategy (and the "strategy after next," after Admiral Greenert leaves office) to shape and sustain a joint environment that appropriately incorporates MIW contributions to joint operations. As Admiral Greenert has acknowledged, "It's all about assured access." Assured access is a joint concern. In that regard, the Navy's offensive A2/AD mines and mining should be embraced to make adversaries think twice about transiting areas that might have been mined.

- Take every opportunity to promote and protect the programs of record. Work to eliminate competitors; outmaneuver reviewing agencies; and educate, inform, or co-opt influential officials, admirals, congressmen, defense industry, the media, and academicians.

We must reorganize MIW so it can do all these things and more. Someone, or some organization, must be responsible for providing trained and ready MCM forces and advanced mines to the combatant commanders. However, as Rear Admiral Ryan recognized, the MIW enterprise is fragmented. Perhaps this responsibility should be a function of the U.S. Fleet Forces Command. Unfortunately, there is no MIW "czar." For now, responsibilities are split among NMAWC, the Naval Expeditionary Combat Command (for EOD, in Little Creek, Virginia), N95 (and other CNO warfare/platforms resource sponsors) in the Pentagon, and numerous program offices in the Office of Naval Research and in Navy systems commands, laboratories, and on the staffs of warfare commanders.

In the early winter of 2014, rumor had it that the Navy was poised to disestablish NMAWC and dole out MIW and ASW responsibilities to the type commanders (i.e., for surface, subsurface, and aviation), perhaps further diluting the focus on MIW. Others have suggested that MIW's mines/mining and MCM areas be split asunder, with MCM remaining within the N95 Expeditionary Warfare arena and mines/mining responsibility subsumed within the N97 Undersea Warfare community. Such a "divide and counter" plan is just the opposite of what needs to be done and can result only in the further decline of U.S. Navy MIW.

The MIW community must develop its own senior leadership. As things stand in 2015, in all but a few exceptional cases, leaders with no or very little background in mines/mining and MCM requirements, capabilities, or operations are making decisions that will affect the program's future. Even if they are strong

leaders with excellent skills in the bureaucratic process, they might not have the background needed to make the right decisions for mine warfare.

Finally, we must find and nurture long-term MIW champions who are skilled in bureaucratic politics and who possess the managerial strengths to manage technological and operational complexity. After all, mines and MCM systems are sophisticated and complex weapons that wait—too often in vain.

NOTES

1. Mike Hixenbaugh, "Silent Threat: Are Sea Mines the Navy's Achilles Heel?," *PilotOnline.com,* hamptonroads.com/.

2. Harvey Sapolski, *The Polaris System Development: Bureaucratic and Programmatic Success in Government* (Cambridge, Mass.: Harvard Univ. Press, 1972), p. 15.

3. Ibid., pp. 41–60.

4. U.S. Navy Dept., *U.S. Navy Mine Warfare Plan: Meeting the Challenges of an Uncertain World* (Washington, D.C.: Office of the Deputy Chief of Naval Operations for Surface Warfare, OP-03, Mine Warfare / EOD Branch, OP-363, January 1992), p. ii. See also U.S. Navy Dept., *21st Century U.S. Navy Mine Warfare: Ensuring Global Access and Commerce* (Washington, D.C.: Program Executive Office for Littoral and Mine Warfare, and Expeditionary Warfare Directorate N85, April 2009), pp. 4–7.

5. Scott D. Burleson, David E. Everheart, Ronald E. Swart, and Scott C. Truver, "The Advanced Undersea Weapon System: On the Cusp of a Naval Warfare Transformation," *Naval Engineers Journal* (March 2012), pp. 59–60; Joshua J. Edwards and Dennis M. Gallagher, "Mine and Undersea Warfare for the Future," U.S. Naval Institute *Proceedings* (August 2014), pp. 72–73.

6. That said, any ship could be a minelayer, often more than once. During the late summer of 1984, Libya used the commercial ferry *Ghat* to deploy at least nineteen weapons— Soviet / East German "export" mines of a type never seen before in the West—in the Red Sea and Gulf of Suez. Reports indicate that the North Korean navy would deploy some of its fifty thousand mines from thousands of fishing boats and junks.

7. U.S. Navy Dept., *21st Century U.S. Navy Mine Warfare;* Edwards and Gallagher, "Mine and Undersea Warfare for the Future."

8. Burleson, Everheart, Swart, and Truver, "Advanced Undersea Weapon System."

9. These impediments were suggested by peer reviewers of the *Naval War College Review,* who remain anonymous. Elsewhere, I have identified similar concerns.

REVIEW ESSAYS

THE AMERICAN CONSTITUTIONAL ORDER

Stephen F. Knott

Stephen M. Griffin, who joined the Tulane law faculty in 1989, specializes in constitutional theory and history. He contends that the propensity of American presidents to engage in war without proper authorization from Congress has "destabilized" the American constitutional system and "deranged policy making." He rightly acknowledges that the struggle to define the limits of executive power dates back to the American founding but insists that something unique occurred in the aftermath of the Second World War.

Griffin makes a plausible case that the nation's thirty-third president, Harry S. Truman, founded a new "constitutional order" when he chose to intervene in the Korean War without congressional authorization and rejected any serious effort at "interbranch deliberation." This was the moment at which the American political system began to decline, and with it sound policy making regarding the use of force. The American constitutional order "underwent a major transformation," replaced by a flawed "jerry-built structure" that led to frequent "policy disasters and constitutional crises." Congress abrogated its responsibilities regarding the most important decision any government can make—the decision to go to war. The legislative branch became, according to Griffin, a "junior partner whose consent was not required to take the nation to war."

Dr. Stephen Knott is currently a professor of national security affairs at the Naval War College. He was formerly co-chair of the Presidential Oral History Program at the Miller Center of Public Affairs at the University of Virginia. His books include The Reagan Years; Alexander Hamilton and the Persistence of Myth; Secret and Sanctioned: Covert Operations and the American Presidency; At Reagan's Side: Insiders' Recollections from Sacramento to the White House; *and* Rush to Judgment: George W. Bush, the War on Terror, and His Critics. *His forthcoming book* Washington & Hamilton: The Alliance That Forged America, *coauthored with Tony Williams, will be published by Sourcebooks in August 2015.*

Scholars who examine war powers tend to fall into one of two camps, either the "presidentialist" or the "congressionalist" camp, as the author puts it. One strength of Griffin's book is that he does not fit neatly into either category, nor does he call for an increased role for the judiciary in the war-powers arena, unlike many of his fellow law professors. Additionally, Griffin impartially presents the arguments of scholars and practitioners of national security affairs, a quality frequently absent in books dealing with war powers. (See, for instance, Rachel Maddow's *Drift: The Unmooring of American Military Power* [2012], or Andrew J. Bacevich's *The New American Militarism: How Americans Are Seduced by War* [2013].) He also exercises a remarkable amount of restraint when offering recommendations for change, understanding as he does that reforms hatched in the academic lounge tend to disintegrate when they encounter reality.

Unfortunately, however, Griffin's book falters at times in its questionable accounts of American history, although he is to be commended for doing what many of his fellow law professors do not—taking history seriously. Nonetheless, it is important to note that American presidents have been ignoring or manipulating Congress since the early days of the Republic: for instance, James Madison's covert wars in East and West Florida, or James K. Polk's machinations prior to the war with Mexico. Griffin's interpretation of the conflict over the scope of executive power between Alexander Hamilton and Thomas Jefferson is marred by his claim that Hamilton's position was "never implemented." It was implemented by George Washington and arguably by Jefferson as well. The latter did not, as Griffin suggests, reject Hamilton's broad interpretation of executive power during his war with the Barbary pirates; Jefferson in fact acted in a duplicitous manner toward Congress by providing it an incomplete account of his assertive executive actions.

Griffin makes other doubtful historical claims as well. For instance, he suggests that it was the Joint Chiefs of Staff who lobbied an apparently reluctant President John F. Kennedy to "finish off [Fidel] Castro." The Kennedy brothers did not need any coaxing from the Joint Chiefs regarding Castro's removal. Griffin is also somewhat dismissive of Ronald Reagan's role in ending the Cold War, a subject that is at least open to debate, and he recoils at Reagan's "astonishing ignorance" of Cold War history and lack of interest in "matters of governance." Reagan in fact drove American policy toward the Soviet Union in a direction resisted by many of his closest advisers. Griffin claims that Dick Cheney was "more staffer than politician," yet Cheney was a member of the House of Representatives for ten years, rising to the position of minority whip.

The author's impartiality deserts him when he turns to the nation's forty-third president, George W. Bush. While more measured than most, some of Griffin's arguments echo those who suffer from "Bush Derangement Syndrome." The

author accepts the notion that Bush and Vice President Cheney represented an existential threat to the constitutional order. He traces some of this back to Cheney's membership on the Iran-Contra committee, where Cheney and other conservatives promulgated a doctrine of presidential power that was one of "the most extreme and dangerous in all of constitutional law." Griffin criticizes President Bush's instructions to his attorney general in the immediate aftermath of the 9/11 attack: "Don't ever let this happen again." The author considers this to be an "impossible and dangerous order," yet it likely would have been given by any president, and it reflected the sentiment of members of Congress who approved Bush's antiterror policies through legislative action and supported the use of torture and other controversial measures, sometimes even calling for harsher methods. That Congress failed to deliberate on these issues at greater length and with a depth of understanding possessed by Griffin has been the rule rather than the exception since 1789.

Griffin claims that the Central Intelligence Agency had "substantial doubts" about Saddam Hussein's possession of weapons of mass destruction. However, prior to the invasion of Iraq that agency's director told President Bush that he had no doubts, that it was in fact a "slam dunk." According to Griffin, the Bush administration engaged in "a general failure to comply with the rule of law," a failure that was accompanied by "multiple genuine threats to civil liberties." In reality, in comparison to John Adams, Abraham Lincoln, Woodrow Wilson, and Franklin Roosevelt, George W. Bush and Dick Cheney might as well have been charter members of the American Civil Liberties Union. Also, it is simply laughable to assert that an "executive clique" led by Bush and his Svengali-like vice president "disabled" the ability of the public and the press to discern "reality."

Nevertheless, Griffin makes a credible case that something is wrong with the American constitutional order and that Congress must abandon its inclination to see itself as a junior partner to the president. But with a membership obsessed with its reelection prospects instead of its constitutional responsibilities, the likelihood of this occurring seems quite remote.

IS STRATEGY AN ILLUSION?

Karl Walling

Betts, Richard K. *American Force: Dangers, Delusions, and Dilemmas of National Security.* New York: Columbia Univ. Press, 2012. 367pp. $20

Richard Betts is one of the most distinguished strategists in the United States today. He is the Salzman Professor of War and Peace Studies and the director of the International Security Policy Program at Columbia University. Not only has he written five prizewinning scholarly books, but he has a wealth of practical experience in formulating and implementing U.S. national security policy and strategy. He has served on the Senate Select Committee on Intelligence (the Church Committee), the National Security Council during the Carter administration in the 1970s, and on the National Commission on Terrorism (the Bremer Commission) in the aftermath of September 11, 2001.

In *American Force* Betts synthesizes his scholarship and practical experience in a book that is in part a collection of articles he has written since the end of the Cold War and in part a kind of intellectual autobiography—a quasi memoir. He tells the story of his transformation from being a Cold War hawk along the lines of Senator "Scoop" Jackson into a post–Cold War dove, somewhere between now–Secretary of State John Kerry and Congressman Dennis Kucinich. Some might find this transformation inconsistent, but Betts is a political realist. The nature of the threat during the Cold War required national self-assertion. The end of the Cold War made such assertion less necessary, but, Betts laments, American political leaders rushed too hastily to fill a power vacuum, and this effort to globalize the American system was bound to produce a backlash.

For Betts, U.S. political leaders made two different kinds of strategic mistakes in the aftermath of the Cold War, one resulting from fecklessness, the other from recklessness. The Clintonites were feckless. As crises developed around the world and public pressure mounted to "do something," they became willing to intervene in Somalia and the Balkans and elsewhere but not to do anything that might prove politically unpopular, that might cost or risk much in public opinion polls. The result was halfhearted compromises— enough presence to put Americans in uniform in

Professor Walling served as an interrogator in the U.S. Army from 1976 to 1980. After earning his BA in liberal arts from St. John's College in Annapolis, Maryland, in 1984, he completed a joint PhD with the Department of Political Science and Committee on Social Thought at the University of Chicago in 1992. Since 2000, following teaching and research appointments with Harvard University, Carleton College, and the Liberty Fund, he has served at the Naval War College.

harm's way but not enough force for them to achieve anything decisive. Quoting Clausewitz, Betts observes that "a short jump is certainly easier than a long one, but no one wanting to get across a wide ditch would begin by jumping half-way." Self-defeating as such faintheartedness might be, Betts is much more incensed by the recklessness he associates with the second Bush administration. Following Samuel Huntington and Walter Russell Mead, he worries about self-inflicted clashes of civilizations arising from ambitions to remake the world order in the American image. This cure may often be worse than the disease, as it spreads disorder, chaos, terror, murder, and even genocide throughout regions, the Middle East especially. Hence, one of Betts's best chapters consists of advice against preventive wars, which rarely turn out well and usually compromise the legitimacy of the instigator of the war. For Betts, preventive wars are almost always opportunities well lost.

The reason lies in the most provocative and deeply theoretical chapter in the book, "Is Strategy an Illusion?" If it is, many who teach at war colleges may need to find a new line of work, so the question deserves careful attention. The chapter was first published as an article in *International Security* in 2000; Betts has updated it to apply to the present. For Betts, strategy is meant to be the bridge between policy and operations. In principle, national interest, grand strategy, policy, strategy, operations, and even tactics are linked in a rational way, with lower means serving ever higher ends. But is such a chain of cause and effect really possible when political leaders choose to use force as an instrument of policy?

Betts produces ten critiques of the very possibility of this sort of instrumental rationality. These range from the difficulty in all wars of predicting what the political result of using force might be to the possibility that nonrational psychological and cultural mind-sets may blind leaders to what actually motivates them. These include cognitive constraints on the ability of anyone in war to comprehend all its variables, especially when "nonlinear" dimensions need to be factored into the strategic calculus; "goal displacement," in which standard operating procedures of complex organizations become ends in themselves rather than entirely changeable means of achieving strategic objectives; interaction with the enemy; and "friction." In the United States especially, they include democratic pluralism, which makes it difficult to set a coherent policy or to tailor strategy to it, and the need for compromise, which makes it highly likely that more than a few political leaders will jump only halfway across Clausewitz's ditch, thus failing to achieve their objectives.

Betts attempts to "salvage strategy" by refuting each of these critiques, showing they are at best partial and do not prove that strategy is impossible, but their cumulative weight makes him well aware that if anything can go wrong in strategy, it often will, which makes him skeptical of those whose fecklessness or recklessness

leads them too eagerly to follow Shakespeare's Mark Antony in "cry[ing] 'Havoc!,' and let[ting] slip the dogs of war." As much as anything, this explains why Betts became a post–Cold War dove. You never know for sure where the dogs of war will go. Hence, it would be folly to fight preventive wars. Betts is not a pacifist, but he insists on restraint, which is not the same as isolation. There is so much uncertainty that wars need to be avoided unless the stakes are extraordinarily high and there is good evidence that a reasonable chance exists of return on the investment of lives, treasure, prestige, and legitimacy. Strategy is not an illusion, but we should avoid the delusion that it can ever be easy. When force is to be used, however, Betts is a hawk. Concentrate force for decisive victory, preferably a quick one, which is often the most humanitarian way to fight as well. Also, because of the cumulative weight of the critiques of the very possibility of strategy, Betts insists on simplicity in planning. The fewer the parts in any plan, the less chance there will be for friction among them. Above all, Betts wants his readers to be mindful of stakes. Al Qaeda and other terrorist organizations are threats, but not of the same kind as the Soviet Union or Nazi Germany. The greatest threat in the twenty-first century is likely to be of the same kind as in the twentieth century —namely, great-power war—so prioritizing against potential peer competitors is the essence of strategic prudence today.

In strategy, it seems, everything old is new again. Perhaps unintentionally, Betts winds up sounding a great deal like Colin Powell. He has almost reinvented the Powell Doctrine, blending caution against resorting to war with overwhelming force when war is chosen as an instrument of policy. At times he sounds like a cheerleader for the Obama administration: "Don't do stupid stuff." But even that administration has found it difficult to follow the all-or-nothing approach of the Betts (aka Powell) Doctrine. Middle-range threats may require something between all and nothing, like drone strikes and special operations, for example. Middle-range threats—dare one say it?—may require more "flexible responses" than Betts seems willing to endorse, though always with some risk that they will be mere half-measures. That said, this book is a marvelous blend of theory, historical cases, and social-science insight, the sort most war college professors could only dream of writing. It merits careful study by all who labor to ensure that strategy is not an illusion.

BOOK REVIEWS

THE RELEVANCE OF HISTORY TO CURRENT MILITARY CHALLENGES

Tangredi, Sam J. *Anti-Access Warfare: Countering A2/AD Strategies.* Annapolis, Md.: Naval Institute Press, 2013. 320pp. $47.95

Longtime and well-known analyst of maritime affairs Dr. Sam Tangredi, a retired U.S. Navy captain, has written a timely, informative, and useful book. First, he provides historical context to contemporary antiaccess/area-denial (A2/AD) strategies. By reinterpreting well-known historical episodes (the efforts of Greek city-states to resist Persia in the fifth century BC) from an antiaccess perspective, he confirms once again what historians and strategists have long known—the relevance of history to current military challenges. Second, Tangredi details the recent history of thinking about antiaccess strategies and ways to defeat them. He cleverly describes a narrative in which the wars with Iraq, technological developments dating to the 1970s, and strategic thinking inside the U.S. Navy and Air Force, the Pentagon's Office of Net Assessment, and private think tanks like the Center for Strategic and Budgetary Assessments all combined to shape the approaches of the United States (such as Air-Sea Battle) to a host of challenges to American power-projection capabilities.

Tangredi also explores the complexity of the interaction of antiaccess strategies with counter-antiaccess strategies, in six case studies. Three represent successful instances of a weaker defending force denying access to a larger force, and three examples are given where entrance into a critical region was achieved. To add even further depth to his analysis, Tangredi examines contemporary or potential future scenarios in which the United States, with or without allied support, might be denied access in East Asia, South Asia, Northeast Asia, and Central Asia. While insiders and experts might quibble with the details of Tangredi's specific judgments, all will find insights into the general problem of countering antiaccess strategies and the specific challenges posed by known foes and geographical conditions.

If I had to take issue with this book, it would be to ask for even more, especially at the level of strategy or, perhaps better, grand strategy. Tangredi presumes, like many naval officers, scholars, and analysts contributing to current debates

over sea power, that access and its handmaiden forward presence are the essentials of American defense strategy. The logic underlying this assumption is seductive in its simplicity: the United States needs access to allow it to use force at times and places of its choosing in the service of its national interests. Yet rarely does Tangredi ask whether the assumed national interests are worth the enormous financial, technological (in terms of opportunities forgone), and even human cost of countering A2/AD strategies, given the challenges of geography, the growing capabilities of potential adversaries, and the evolving nature of modern warfare.

After all, what specific national objectives are at stake in, for example, the Taiwan Strait scenario that could not be achieved by other means? Moreover, the author gives insufficient attention to the downside of forward presence and, especially, to the potential negative consequences of executing counter-A2/AD strategies. Some downsides can, of course, be intuited from the historical case studies included in chapters 3 and 4. However, to stress this weakness, serious as it is for the state of maritime and naval strategy in general, would be unfair to Sam Tangredi, because it would ask him to write a book that he chose not to write. He chose to explain and analyze antiaccess warfare in both contemporary and historical contexts, and he has done an excellent job of it. I highly recommend that the readers of this journal find room for *Anti-Access Warfare* on their bookshelves.

PETER DOMBROWSKI
Naval War College

Mulqueen, Michael, Deborah Sanders, and Ian Speller, eds. *Small Navies: Strategy and Policy for Small Navies in War and Peace.* Burlington, Vt.: Ashgate, 2014. 247pp. $39.95

Small Navies is a selection of essays presented at the Small Navies Conference held in October 2012 at the National University of Ireland, Maynooth, cosponsored by the Corbett Centre for Maritime Policy Studies, King's College London, and the Centre for Applied Research in Security Innovation, Liverpool Hope University. The first three essays examine existing classifications of what constitutes a small navy. Chapters 4 and 5 reflect on the conditions that inspire innovation within small navies. The remaining eight essays analyze the small navies of several states and discuss their characteristics and employment, the relationships between strategy and naval force structure, and the particular challenges they face.

The first theme in the collection is the question of what constitutes a small navy. Several definitions are proposed; the traditional quantitative methods of comparing and measuring navies are discussed, as well as movements beyond such historical measurements of naval power as tonnage, hulls, and capital ships.

Eric Grove, Geoffrey Till, and Basil Germond review navy hierarchical classification criteria proposed by analysts during the past three decades. They consider naval warfare principles and common naval functions and missions. Till's essay evaluates the differences and similarities between large and small navies, arguing that "small navies are simply big navies in miniature." He considers

functions common to all navies, the impact of cooperation among navies of all sizes, and the common pressure placed on navies to align resources with operations and mission execution. Germond's essay compares classification criteria and argues that twenty-first-century navies should be classified by their "order of effect" vice their "order of battle."

This book as a whole does not propose its own definition generally accepted by the authors. It is instead a thoughtful examination of the conditions in the twenty-first-century security environment that challenge preexisting classifications while broadly observing that the size of a navy is an insufficient basis of classification.

Building a small navy is a national choice. Essays in this work examine the conditions of the strategic environment that cause states to build them, finding that because of the effects of globalization, technology, and economics, navies are valuable to states for a variety of reasons.

Several essays discuss the necessity for small navies to provide perceived or actual returns on national investment in naval force structure. Absent a nationally valued return, small navies face an existential threat, which may explain the observation that many small navies have made the practical decision to build constabulary and coastal-defense forces. Such navies focus on maritime missions that promote national-security and economic interests through operations in territorial seas and exclusive economic zones.

Small Navies is a thoughtful collection of concepts and ideas now present in naval force planning. This book assesses the range of strategic and domestic

influences facing states and navies engaged in maritime force-structure decision making. Today, naval shipbuilding costs are on the rise, potential adversaries have access to technology that complicates the threat to maritime forces, and states struggle to dedicate more than a few percentage points of gross domestic product to defense. These trends portend that a growing number of states will possess the capacity to build only small navies.

SEAN SULLIVAN
Naval War College

Moten, Matthew. *Presidents & Their Generals: An American History of Command in War.* Cambridge, Mass.: Harvard Univ. Press, 2014. 443pp. $39.95

The author delivers a chronological review of how the relationship between the president and senior Army leaders has evolved over the life of the Republic. The book is part history, tracing the evolution of U.S. civil-military relations from an uncertain beginning to a level of increasing professionalism, to the current state, which the author finds excessively partisan. It also belongs on any shelf devoted to government policy, since it presents a convincing argument that Samuel Huntington's concept of operational control is as artificial a construct as the frictionless plane described in most physics textbooks. Moten is not the first author to suggest this. For example, Mackubin Owens, of the Naval War College, has long held that the U.S. political-military relationship is more akin to a contract that has been periodically renegotiated. However, Moten takes this a step farther by

arguing that the civil-military contract is under constant negotiation and that the reality of governance makes it inevitable that senior generals and political leaders will be (and should be) involved in each other's spheres of endeavor. This partnership is often an uneasy one and is always marked by tension, but when it works the country profits immeasurably.

Moten argues convincingly that this key relationship works best when both partners are competent practitioners of their respective arts, when each respects the other's roles and abilities, and when each is willing to engage in frank, even adversarial discourse to gain the best possible understanding and strategy. He argues there are times when military leaders should offer advice that requires political understanding and times when a president should intervene in military affairs. The relationship is not an equal partnership; the civil partner must take precedence over the military. The pairings of U. S. Grant and Abraham Lincoln and of George C. Marshall and Franklin D. Roosevelt are regarded as the best the nation has seen.

Although civil-military relations also evolve during times of peace, Moten confines his examination to wartime leaders, arguing that it is during conflict that these relationships can do the most good or harm to the nation and put the maximum strain on the participants. He also all but exclusively confines his work to the relationships between presidents and generals. *Presidents & Their Generals* does not suffer as a result.

Moten is on his most solid ground when he discusses historical relations up to the end of the Cold War. His observations are logical, his analysis solid, and his tone temperate. Much of this work may

be unfamiliar and therefore even more welcome to readers whose knowledge of civil-military relations only connects the dots represented by the presidencies and wars of George Washington, Abe Lincoln, FDR, and Lyndon B. Johnson.

Presidents & Their Generals also does justice to some of the warmer moments of the Cold War, such as the Bay of Pigs and the long involvement in Vietnam. As with Moten's discussion of earlier conflicts, there is no lack of willingness to find fault and identify weaknesses. For example, his dispassionate accounting and analysis of Secretary of Defense Robert McNamara strikes just the right note.

Unfortunately that note sounds increasingly sour as Moten turns his attention to post–Cold War civil-military relations. His criticisms come across as increasingly personal, and his assertions appear not to be well supported. The choice of adjectives and other descriptions becomes increasingly pejorative. This tendency reaches a crescendo when Moten describes Operations ENDURING FREEDOM and IRAQI FREEDOM, which he clearly views as among the nation's worst failures of the civil-military partnership. He is scathing in his descriptions of General Tommy Franks, Vice President Richard Cheney, Secretary of Defense Donald Rumsfeld, and others. This is not to say that he does not present a case, but he should, as much as possible, maintain objectivity and limit inflammatory writing.

The book concludes, rather hurriedly, with a series of recommendations to strengthen the strategic partnership. If anything, this chapter is much too short. However, taken in its entirety, *Presidents & Their Generals* is a worthy

addition to the genre and deserves serious consideration not only by scholars but also by general readers.

RICHARD NORTON
Naval War College

Lemnitzer, Jan Martin. *Power, Law, and the End of Privateering.* Basingstoke, U.K.: Palgrave Macmillan, 2014. 254pp. $95

Jan Martin Lemnitzer has made a very important contribution to international history in this study of the 1856 Declaration of Paris and its immediate aftermath. Having begun his research as a graduate student at the University of Heidelberg, Lemnitzer completed it as a PhD thesis in the Department of International History at the London School of Economics in 2010. With a highly structured approach and a persuasively presented argument, Lemnitzer has made excellent use of primary-source materials from Austria, Britain, France, Germany, and the United States. He has brought to light much new and detailed material, which he complements with broad-gauged and valuable insight.

Most importantly, Lemnitzer places his story in the context of the complex balance required to create and maintain international law in matters of warfare. On the one hand, this is a balance between law and power; on the other, between great powers and smaller states. Lemnitzer demonstrates that the 1856 Declaration of Paris was the event that clearly established the manner in which modern international law is created. Likening it to a global opinion poll among national governments, he shows how the congress of nations at Paris after the Crimean War created instantaneous international law through what has since become common under the modern rubric of "multilateral law-making treaties."

Historians are often puzzled about why the United States never signed the declaration, and they have asserted a variety of explanations. Through his careful research, Lemnitzer unveils the fascinating story of how Britain and the world's leading powers focused the declaration's ban on privateering directly on American policy. For most countries at that time, privateering was a largely forgotten weapon. But Britain and the United States had the largest merchant shipping fleets in the world, and there was a danger of war between the two. Since America had a small and weak navy, its merchant ships, which could easily be converted to privateers, were collectively its main strategic weapon. Since they could effectively attack Britain's network of global trade, statesmen in London had a major strategic interest in eliminating that threat, which could crush British control over global trade.

Lemnitzer follows the development from the experience of the Crimean War and shows how that first major conflict involving steam-powered warships raised a range of questions about the future course of warfare at sea. The idea that privateering should be banned first arose in 1853. While for some it was an advance, the banning by the civilized world of an ancient barbaric practice, for others it was a clear-eyed way to prevent smaller nations from causing major damage. Lemnitzer shows that the declaration was a deliberate attempt to isolate the United States diplomatically and force it to accept the abolition of privateering to suit British strategic ends.

America actively attempted to thwart these developments, creating a major diplomatic campaign for the permanent establishment of neutral trading rights in wartime without restriction on privateering. Secretary of State William Marcy proposed, in what was soon dubbed the "Marcy amendment," that the United States would accept the abolition of privateering only if it was linked to the complete immunity of merchant shipping in wartime, regardless of flag. Through the initiative of the business community in the city-state of Bremen, this diplomatic initiative nearly isolated Britain. During the American Civil War, as the Confederacy issued letters of marque, the United States offered to join the declaration, only to withdraw its offer when it became apparent that France and Britain would not attack Southern privateers.

The participants in the Austro-Prussian War of 1866 nearly created a precedent in practice for Marcy's suggestion. The subsequent Franco-Prussian War in 1870–71 involved a global French war on German trade that even led French warships into American waters in search of their prey. Germans saw the French blockade as illegal in terms of the declaration. At first Prussia invoked Marcy's principle, but when Otto von Bismarck saw what he termed French violations of the declaration he responded in a way based on his belief that the violation of international law justified unrestricted attacks on French trade. Convinced that when a neutral state is wronged it has the unqualified right of reprisal, Bismarck established a singular interpretation of international law, which it would use again in its policy of unrestricted submarine warfare of the First World War.

In conclusion, Lemnitzer comments ruefully that "it is the enforcement dilemma that constantly reminds us that for all our progress, our present international community centered on the [United Nations] is a thin veneer, masking the fact that the basic fabric that holds our rapidly globalizing world together is a cloth made in the late nineteenth century."

JOHN B. HATTENDORF
Naval War College

Rickards, James. *The Death of Money: The Coming Collapse of the International Monetary System.* New York: Penguin, 2014. 356pp. $28.95

Admiral Michael Mullen, former Chairman of the Joint Chiefs of Staff, stated in a 21 January 2014 speech that the national debt is the biggest threat to national security. James Rickards underscores that view in this sequel to his earlier *Currency Wars: The Making of the Next Global Crisis* (reprinted 2012). Rickards, a consultant to both the Defense Department and the Central Intelligence Agency, addresses a range of other national-security issues in the financial realm. Among them are currency inflation and deflation, cyber attacks, and financial manipulations by terrorist groups and other adversaries.

Terrorist groups such as Al Qaeda and Islamic State in Iraq and the Levant (ISIL; also called ISIS) have become adept at "insider" trading and other schemes to enrich themselves at the expense of Western nations. As the author notes, such activity was present well before 9/11, but lacking expertise in financial operations, the CIA failed to spot it as an indication of a

possible attack. Fortunately, the author argues, this deficiency has been partly corrected with the acquisition of expertise in "market intelligence," the ability to analyze "big data" in stock exchange trading for unusual activity.

The author discusses at length Chinese financial and cyber capabilities and vulnerabilities. Cyber attack and financial/currency manipulation have become Chinese specialties, as manifested in recent attacks on the U.S. Postal Service. At the same time, the Chinese economy has become shaky as a result of poor investments, exemplified by the construction of numerous huge buildings with no prospect of occupation and by capital flight. The latter results from the placement by financial elite of their capital gains in safe havens, mainly the United States.

On the other side of the world, Germany, under the leadership of Angela Merkel, has become the dominant player in the European Union, through its powerful position in the EU central bank. According to the author, however, the strengthened euro is threatened by the weakened U.S. dollar, through the export of inflation. Rickards discusses how the U.S. Federal Reserve's "printing" of money to support the national deficit has led to such export and the dangers it poses for the world economy. The weakening of the dollar, until now the world's "reserve currency," has led to demands that it be replaced by "special drawing rights" (SDRs) on the International Monetary Fund (IMF), a creation of the post–World War II Bretton Woods agreements.

Rickards discusses how uncertainties inherent in fiat currencies (the U.S. dollar, the Chinese yuan, the EU euro, IMF SDRs, etc.) have led to proposals for return to the pre-1914 gold standard. The possibility, even likelihood, of the adoption of that currency standard has resulted in buildups of national gold reserves, especially by the Chinese. Rickards closes with an analysis of a maelstrom that may very well result if the present currency and financial threats are not resolved.

Like its predecessor, this work will be of interest to military officers because of its analyses and predictions of economic stress and the associated effects on national defense.

CDR. ROBERT C. WHITTEN, U.S. NAVY RESERVE (RET.)
Cupertino, Calif.

Krepinevich, Andrew, and Barry Watts. *The Last Warrior: Andrew Marshall and the Shaping of Modern American Defense Strategy*. New York: Basic Books, 2014. 336pp. $29.99

I remember the first time that I heard the name of Andrew Marshall. Here was a man, I was told, who in his early nineties, a man of the "greatest generation," was still working away in a small office in the Pentagon. He had worked for every president since Richard Nixon and every Secretary of Defense since James Schlesinger. I was both curious and awed. Who has the grit to last so long in our bureaucracy? I could only imagine the level of intellectual power it would take to remain trusted and valued not only for a few years but *decades*. With Marshall's upcoming retirement in early 2015, it is only fitting that someone write a biography of this great civil servant, an assessment of his forty-plus years of public service and of the impact of his

office—the Office of Net Assessment —on senior government decision makers. Enter Andrew Krepinevich and Barry Watts's excellent biography.

Krepinevich and Watts are no strangers to Marshall. They were a part of what is fondly called "St. Andrew's Prep," the some ninety or so people who over the years have worked for Marshall. Many of them have gone on to have impacts elsewhere in government or in the private sector, identifying and discussing national-security issues with the same rigor and intellectual chops that their boss in the Office of Net Assessment brought to the job.

Krepinevich and Watts handle his story with objectivity, aiming to show his "intellectual contributions to US defense strategy." Thus the story begins with a young Andrew Marshall, an autodidact, reading widely and voraciously in Detroit. He goes on to the University of Chicago, earning a master's in economics. He then considers earning a PhD in statistics but instead decides, in the 1950s, to work for the then-fledgling RAND Corporation. Marshall there meets some influential people who would change his life and would help propel him into the perch he has held from 1973 to today.

It is a credit to the authors that they can craft a thorough biography about a man whose work is largely classified. In fact, only one of his assessments has ever been written at the unclassified level. But his intellectual fingerprint has been so prevalent that there is plenty to discuss. The authors go into great detail about how Marshall developed the idea of net assessment, arguing that he looked further out than others, identifying issues that might challenge American

decision makers in the future. He was so prescient that the discussions many of us are having today about China's rise were presaged by what Marshall and his office were thinking about as early as the late 1980s and into the 1990s.

Marshall left it to his subordinates to best figure out for themselves what net assessments were; he balanced intellectual guidance with demanding thoroughness. In a building where egos loom large and people posture for influence, Marshall remained out of the limelight, quietly but diligently working to identify the right questions, the ones that needed to be explored.

Marshall's exit will leave a hole. But this excellent biography and the men and women he mentored are testaments to his impact and a reminder that we have much to do to remain competitive in the future.

LT. CDR. CHRISTOPHER NELSON, U.S. NAVY
Naval War College

Linn, Brian McAllister. *The U.S. Army and Counterinsurgency in the Philippine War, 1899–1902.* Chapel Hill: Univ. of North Carolina Press, 2000. 258pp. $36.97 (paperback)

Brian McAllister Linn, professor of history and liberal arts at Texas A&M University, addresses here the war between the United States and the fledgling Philippine Republic, detailing the prolonged guerrilla struggle that followed. First published in 1989 and reprinted in 2000, Linn's book presents the struggle between the U.S. Army and guerrillas on the island of Luzon as a series of regionalized conflicts. Eschewing a conventional campaign history,

the author argues that circumstances of culture, ethnicity, religion, and terrain made the challenges in each region unique. The book demonstrates that the Army defeated the insurgency because commanders focused their efforts on the idiosyncrasies of each district, rather than following a campaign plan handed down from headquarters in Manila. While this flexible and decentralized approach may not have been intentional, Linn argues that it succeeded because it allowed commanders the latitude to implement measures responsive to each local situation. This regionalized view demonstrates the value of what modern practitioners refer to as "mission command," and that is what makes this work relevant for readers today.

The book is organized into six chapters—an introduction, four regional case studies, and a short conclusion. The first chapter is a sweeping synopsis of the conventional war in the Philippines and a brief but excellent introduction to the geography of the islands, the Spanish colonization of Luzon, and the nascent Filipino reformist and nationalist movements that led to open revolt against Spain in 1896.

In the following chapters Linn describes counterinsurgency operations in four numbered districts. Using several examples in each of the districts, he skillfully supports his claim that the insurgency varied widely from one area to the next. For instance, in the Fourth District, the Department of Northern Luzon, the Army exploited cultural rifts in the provinces by playing antirevolutionary elements of the population against the guerrillas, who themselves eroded what local support they enjoyed by heavy-handed terrorism against the populace. In contrast to guerrilla campaigns in the other districts, the insurgents in the Fourth District suffered from poor leadership and slipshod organization. The Army rapidly gained the support of the local elite, and pacification soon followed.

Linn describes the counterinsurgency in the remaining districts. Wildly different circumstances prevailed in each. In his description of the Army's responses Linn supports the validity of his claim that the U.S. Army eventually pacified the archipelago by making campaign decisions at the right level and on the basis of local circumstances, rather than by forcing a centralized, top-down approach.

Linn makes a well-organized argument in support of his regionalized thesis, but his effort is not without some shortcomings. First, his case studies apply only to the island of Luzon. Details of American efforts elsewhere in the archipelago would have broadened understanding of the war. Second, Linn only makes cursory mention of the logistical challenges presented by the terrain and the disjointedness of the theaters of operation. A brief but comprehensive look at the logistics in each of the case studies would have been appropriate, especially a discussion of how logistical problems affected areas differently. Finally, the text includes several photographs, but the six maps are lacking in topographic detail that would have visually reinforced the remoteness and disparate nature of the four districts.

In each district, the Army prevailed because commanders implemented plans that suited the unique circumstances of the insurgency in their respective districts or provinces. This decentralized approach avoided strict adherence

to doctrine that did not suit situations on the ground and saw the employment of effective, sophisticated, counterinsurgency measures that reflected the local state of affairs. Although not achieved without controversy, the victory in the Philippines represents the most successful counterinsurgency campaign in U.S. military history. Though it details a war fought over a century ago, the book holds valuable lessons for today. It provides not only a historical framework for understanding counterinsurgency but also a glimpse into the complexities that have confronted the U.S. military over the last thirteen years and points to the wisdom of a decentralized command structure for such cases. Linn leaves the reader with a reminder that even when the strategic objective is President William McKinley's "benevolent assimilation," or the winning of George Orwell's "hearts and minds," nonmilitary efforts toward achieving it will not work without victory over the insurgents responsible for the instability.

LT. CDR. MATTHEW NOLAND, U.S. NAVY
Naval War College

IN MY VIEW

PRESTIGE AND PARTICIPATION

Sir:

To the section "The Pacific War," pages 24–25, in Peter J. Dean's Autumn 2014 article in this journal, "Amphibious Operations and the Evolution of Australian Defense Policy," could be added discussion of the 1945 Australian operation against previously bypassed Japanese-held areas and Australian operations against Dutch Borneo. These operations were conceived, developed, and implemented because of Australian domestic political and economic factors, the ambition of Australian general Thomas Blamey and others who would execute these operations, and long-range postwar political and diplomatic objectives. These operations were opposed by General Douglas MacArthur.

The Australian people wanted their troops used in combat in 1945 or demobilized for civilian work. Anticipating these operations, Australian prime minister John Curtin informed British prime minister Winston Churchill on 8 October 1943 (quoting hereafter from my article in the January 1985 *Military Affairs*), "'The Government [of Australia] considers it to be a matter of vital importance . . . that her military effort should be concentrated as much as possible in the Pacific and that it should be on a scale to guarantee her an effective voice in the peace settlement.' In June 1945, answering criticism of the use of Australian forces to liquidate previously bypassed Japanese-held areas, Prime Minister [Ben] Chifley explained, 'From the aspect of prestige and participation in the Pacific peace settlement, it is of great imperative [*sic*] to Australia to be associated with the drive to defeat Japan.' At the San Francisco Conference a few weeks later, the Australian representatives 'stressed that the war effort that Australia has made and intends to continue until Japan is defeated entitles us to a special consideration of our views on and our part in the final Pacific settlement.'

[paragraph omitted]

"Prime Minister Curtin told his House of Representatives [on 24 April 1945] the Australian government 'considered it was both logical and appropriate that

Australian forces should take over the islands which formed our outer screen of defence and which were mostly our own territory.' And he went on: 'The Government accepts full responsibility for the operations that are being carried out.' The Australian general in charge, Blamey, kept MacArthur informed of those operations, but MacArthur, of course, gave 'no specific instructions' regarding them. The local commander in these operations had 'considerable freedom of action as to methods to be employed.' The Australian commanders involved chose 'to carry out active operations in effecting neutralization where other commanders might decide on more passive measures.'

   "When Curtin asked MacArthur his opinion of Blamey's proposal 'to attack the Japanese instead of using passive defense measures,' MacArthur told Curtin that 'the tactics of the problem naturally were a responsibility of the local commander,' but that he 'was in disapproval of the method suggested as being unnecessary and wasteful of lives and resources.' MacArthur 'advised him [Curtin] strongly not to permit the tactical program suggested by General Blamey.' Charges were raised in the Australian press that these Australian operations were not adequately equipped, supplied, and supported. These criticisms were not attacks upon MacArthur, since they concerned 'the adequacy of Australian equipment and procedures,' which were matters beyond the scope of MacArthur's authority. And upon investigation, the charges were revealed to have been unfounded."

JOSEPH FORBES
Pittsburgh, Pa.

OF SPECIAL INTEREST

RECENT BOOKS

A selection of books of interest recently received at our editorial office, as described by their publishers:

Manthorpe, William H. J., Jr. *A Century of Service: The U.S. Navy on Cape Henlopen, Lewes, Delaware, 1898–1996.* Wilmington, Del.: Cedar Tree Books, 2014. 164pp. $20
This book chronicles the history of the little known association of the Navy with Cape Henlopen and the citizens of Lewes, Delaware.

Johnson-Freese, Joan. *Educating America's Military.* New York: Routledge, 2013. 144pp. $35.95
Dr. Johnson-Freese offers a detailed examination of the professional military education system in the United States, specifically the war colleges, from a critical, insider's perspective.

Weintraub, Stanley. *A Christmas Far from Home: An Epic Tale of Courage and Survival during the Korean War.* Boston: Da Capo, 2014. 276pp. $26.99
Weather, terrain, Chinese firepower, and a four-thousand-foot chasm made an escape seem impossible in the face of a vanishing Christmas. Yet endurance and sacrifice prevailed, and the last troopships weighed anchor on Christmas Eve. In the tradition of his *Silent Night* and *Pearl Harbor Christmas,* Weintraub presents another gripping narrative of a wartime Christmas season.

Jeansonne, Glen, and David Luhrssen. *War on the Silver Screen: Shaping America's Perception of History.* Lincoln: Univ. of Nebraska Press, 2014. 184pp. $19.95
This book draws on more than a century of films and history, including classics such as *All Quiet on the Western Front, Apocalypse Now,* and *The Hurt Locker,* to examine the legacy of American cinema on the twentieth- and twenty-first-century attitudes about war.

Patterson, Eric, ed. *Military Chaplains in Afghanistan, Iraq, and Beyond.* Lanham, Md.: Rowman & Littlefield, 2014. 226pp. $72

In this edited volume, practitioners and scholars chronicle the changes that have happened in the field during the first part of the twenty-first century. Using concrete examples, they take a critical look at the rapidly changing role of the military chaplain and raise issues vital to U.S. foreign and national security policy and diplomacy.

REFLECTIONS ON READING

Professor John E. Jackson of the Naval War College is the program manager for the Chief of Naval Operations Professional Reading Program.

One of the primary missions of the Chief of Naval Operations Professional Reading Program (CNO-PRP) is to encourage sailors of all ranks to *read* for professional development, for self-improvement, and for entertainment and relaxation. A very interesting website, *WhytoReadBooks* (WhytoRead.com), provides a wealth of knowledge about interesting and informative books, and a recent post on that site provided the following list (slightly edited and used by permission) of reasons why you should read more books:

Ten Reasons Why You Should Read More Books:

1. To Develop Your Verbal Abilities. Although it doesn't always make you a better communicator, those who read tend to have a more varied range of words to express how they feel and to get their point across. This increases exponentially with the more volumes you consume, giving you a higher level of vocabulary to use in everyday life.

2. Improves Your Focus and Concentration. Unlike blog posts and news articles, sitting down with a book takes long periods of focus and concentration, which at first is hard to do. Being fully engaged in a book involves closing off the outside world and immersing yourself into the text, which over time will strengthen your attention span.

3. Readers Enjoy the Arts and Improve the World. A study done by the National Endowment for the Arts (NEA) explains that people who read for pleasure are many times more likely to visit museums and attend concerts than those who do not, and almost three times more likely to perform volunteer and charity work. Readers are active participants in the world around them, and that engagement is critical to individual and social well-being.

4. It Improves Your Imagination. You are only limited by what you can imagine, and the worlds described in books, as well as other people's views and opinions,

will help you expand your understanding of what is possible. By reading a written description of an event or a place, your mind is responsible for creating that image in your head, instead of having the image placed in front of you when you watch television.

5. Reading Makes You Smarter. Books offer an outstanding wealth of learning and at a much cheaper price than taking a course. Reading gives you a chance to consume a huge amount of research in a relatively short amount of time. Anne E. Cunningham and Keith E. Stanovich's book *What Reading Does for the Mind* also notes that heavy readers tend to display greater knowledge of how things work and who or what people were. Additionally, books at home have been strongly linked to improved academic achievement.

6. It Makes You Interesting and Attractive. This goes hand in hand with reading to become smarter. Having a library of information that you have picked up from nonfiction reading will come in handy in any academic or scholarly conversation. You will be able to hold your own and add to the conversation instead of having to make your excuses and leave. You will be able to engage a wider variety of people in conversation and in turn improve your knowledge and conversation skills.

7. It Reduces Stress. A study by consultancy firm Mindlab International at the University of Sussex showed that reading reduces stress. Subjects only needed to read, silently, for six minutes to slow down the heart rate and ease tension in the muscles. In fact, it resulted in lower stress levels than before they started reading.

8. It Improves Your Memory. In her book *Proust and the Squid: The Story and Science of the Reading Brain,* Maryanne Wolf explains that "typically, when you read, you have more time to think. Reading gives you a unique pause button for comprehension and insight. By and large, with oral language—when you watch a film or listen to a tape—you don't press pause." The benefits of this increased activity keeps your memory sharp and your learning capacity nimble.

9. To Discover and Create Yourself. In his book *How to Read and Why,* Harold Bloom says that we should read slowly, with love, openness, and with our inner ear cocked. He explains we should read to increase our wit and imagination, our sense of intimacy—in short, our entire consciousness—and also to heal our pain. "Until you become yourself, what benefit can you be to others?" With the endless amount of perspectives and lives we can read about, books can give us an opportunity to have experiences that we haven't had the opportunity to, and still allow us to learn the life skills they entail. Books are a fast track to creating yourself.

10. For Entertainment. All the benefits of reading mentioned so far are a bonus result of the most important benefit of reading: its entertainment value. If it were not for the entertainment value, reading would be a chore but it needn't be.

Reading is not only fun, but it has all the added benefits that we have discussed so far. Much more enthralling than watching a movie or a TV show (although they have their many benefits as well), a good book can keep us amused while developing our life skills.

We hope you will find one or more compelling reasons from the list above to pick up a book (from the CNO-PRP, or elsewhere) and enrich your life. And check out WhytoRead.com to find book lists from a number of genres to inspire you to read more.

JOHN E. JACKSON